EXHIBIT "26"

Archaeological Inventory Survey Report for the AES Lawai Solar and Storage Project, Lāwa'i and Kōloa Ahupua'a, Kōloa District, Kaua'i TMK: [4] 2-6-003:001 por.

Prepared for
CH2M Hill

Prepared by
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(Job Code: LAWAI 11)

September 2017

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EXHIBIT "26"

Management Summary

Reference	Archaeological Inventory Survey Report for the Lāwa'i Solar and Storage Project, Lāwa'i and Kōloa Ahupua'a, Kōloa District, Kaua'i, TMK: [4] 2-6-003:001 por. (Wildey et al. 2017)
Date	September 2017
Project Number(s)	Cultural Surveys Hawai'i, Inc. (CSH) Job Code: LAWAI 11
Investigation Permit Number	CSH completed the archaeological inventory survey (AIS) fieldwork under archaeological fieldwork permit number 17-08, issued by the Hawai'i State Historic Preservation Division (SHPD) per Hawai'i Administrative Rules (HAR) §13-282.
Agencies	Kaua'i Planning Commission, Hawaii State Land Use Commission, SHPD
Land Jurisdiction	Private
Project Proponent	AES Distributed Energy, Inc. (AES DE) and its affiliate AES Lawai Solar, LLC
Project Funding	Private
Project Location	The project area is bounded by Lāwa'i Town on the northwest, by Koloa Road to the north, Aepoeha Reservoir on the southeast, the southeast heading branch of Aka Road on the southwest, and an unnamed stream on the west (a tributary to Lāwa'i Steam that feeds Kaupale and Kumano reservoirs). The project area is approximately 2 km north of the coast. The project area is located in the *ahupua'a* of Lāwa'i and Kōloa, Kōloa District, Kaua'i Island, TMK: [4] 2-6-003:001 por. The project area is depicted on a portion of the 1996 Koloa U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle.
Project Description	In late 2016 and early 2017 respectively, the Kauai Island Utility Cooperative (KIUC) awarded a Power Purchase Agreement (PPA) and Interconnection Agreement to AES DE after a competitive bid process in which KIUC sought proposals for a solar PV and energy storage solution to serve the island of Kauai. The proposed project will be constructed and operated by AES DE and its affiliate AES Lawai Solar, LLC, and will consist of an approximately 28 MW direct current (DC) / 20 MW alternating current (AC) ground-mounted solar PV system, coupled with a 20 MW – 5-hour (100 MWh) BESS, and related interconnection and ancillary facilities. The major project components will include solar PV panels, BESS containers, inverters, and a project substation; these components will occupy a total of approximately 196 acres. In addition, the project will include two construction staging areas, totaling approximately 14 acres.
Project Acreage	Total project acreage is approximately 221 acres (89 hectares).

Project Area	For the purposes of this AIS investigation, the project area comprises the entire approximately 221-acre project area.
Historic Preservation Regulatory Context	This AIS investigation fulfills the requirements of HAR §13-276 and was conducted to identify, document, and assess significance of any historic properties. This document is intended to support the proposed project's historic preservation review under Hawai'i Revised Statutes (HRS) §6E-42 and HAR §13-284-6. It is also intended to support any project-related historic preservation consultation with stakeholders, such as state and county agencies and interested Native Hawaiian Organizations (NHOs) and community groups.
Fieldwork Effort	Fieldwork was accomplished between 2 May 2017 and 26 May 2017 by Johnny Dudoit, B.A., Tyler Turran, B.A., and Missy Kamai, B.A., under the general supervision of Hallett H. Hammatt, Ph.D. This work required approximately 19 person-days to complete.
Historic Properties Identified	Two historic properties comprised of three features were revisited and 32 new historic properties were identified during the current AIS. The two historic properties that were revisited are SIHP # 50-30-10-1051 Feature A and Feature B (SIHP # -1051) and SIHP # 50-30-10-0073 (SIHP # -0073). SIHP # -1051 was revisited and confirmed to include two features, No. 18 Reservoir Ditch (Ditch 18) and No. 19 Reservoir Ditch (Ditch 19) of the McBryde Sugar Plantation, first documented by Hammatt and Shideler (2007). Five new historic property groupings including 31 features were identified within the project area and are recommended to be considered features of SIHP #-1051. They are all features of the McBryde plantation infrastructure associated with extensive sugarcane production in the project area. The SIHP # -1051, features are as follows: Feature A - Ditch 18 Feature B - Ditch 19 Feature C - plantation road or transportation network-six features Feature D – agricultural field berms –two features Feature E - Aepo Stream reservoir system-six features Feature F – ditch segment-1 feature Feature G - pipe Feature F and Feature G are located in an area that was subsequently determined to be outside of the project area. SIHP # 50-30-10-0073 (Bennett Site 73; 1931:117) was revisited and confirmed to be a plantation field-rock clearance mound. Substantial modifications and enlargement of the rock pile caused by continued use for field-rock consolidation was noted. The field survey identified a

	second field-rock clearance mound near SIHP # -0073 and is assigned the SIHP # -0073 Feature 1; being outside the finalized project area. A reduction in the project area during the field survey has resulted in SIHP # -0073 and SIHP # -0073 Feature 1 now being located outside of the project area.
Significance Recommendation	The previously identified historic property SIHP # 50-30-10-0073 and the newly identified SIHP # 50-30-10-0073 Feature 1 are assessed under HAR §13-284-6 as significant under Criterion d (have yielded, or is likely to yield, information important for research on prehistory or history) only as it provides information regarding plantation field clearing practices of piling boulders and cobbles from sugarcane field clearing against natural outcrops and/or previous piles of field clearance boulders and cobbles so as to maximize productive field area. Reevaluation of SIHP # 50-30-10-1051, two earthen ditches (No. 18 Reservoir Ditch and the No. 19 Reservoir Ditch) agrees with the Hammatt and Shideler (2007:37) assessment of significance, pursuant to HAR §13-284-6. SIHP # 50-30-10-1051 is assessed as significant under Criterion d (have yielded, or is likely to yield, information important for research on prehistory or history). It is recommended that the five new groups comprising 31 historic property features identified, all features of plantation infrastructure associated with the extensive sugarcane production in the project area, be considered features of SIHP # 50-30-10-1051 and assessed as significant pursuant to HAR §13-284-6 under Criterion d (have yielded, or is likely to yield, information important for research on prehistory or history). These significance recommendations are included in this AIS report for the review and concurrence of the SHPD.
Effects to Significant Historic Properties	Pursuant to Hawai'i State historic preservation review legislation in HAR §13-284-7, and based on the recommended significance assessments of the previously identified SIHP # 50-30-10-1051 and newly identified features of this historic property in the project area (all elements of abandoned cane plantation road and irrigation systems), the project-specific effect determination is "Effect, with agreed upon mitigation commitments." This effect recommendation is included in this AIS report for the review and concurrence of the SHPD.
Mitigation Recommendations	Archaeological monitoring is recommend for mitigation, following completion of a SHPD-accepted archaeological monitoring plan (AMP) for the AES DE Lawai Solar and Storage project, Lāwa'i and Kōloa Ahupua'a, Kōloa District, Kaua'i, TMK: [4] 2-6-003:001 por., in accordance with HAR §13-279, with specific provisions for archaeological documentation during construction in accordance with

	HAR §13-278 for SIHP # 50-30-10-1051 Features A through D. The AMP will be submitted to SHPD for review and acceptance prior to commencement of project activities that could adversely affect the historic properties. No incursion in reservoirs Feature E is occurring. SIHP # 50-30-10-1051 Feature F and Feature G as well as SIHP # 50-30-10-0073 and Feature 0073-1 are all outside the AES DE Lawai Solar and Storage project area

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Section 1 Introduction

1.1 Project Background

At the request of CH2M Hill, Cultural Surveys Hawai'i, Inc. (CSH) has prepared this archaeological inventory survey report (AISR) for the AES Lawai Solar and Storage project, Lāwa'i and Kōloa Ahupua'a, Kōloa District, Kaua'i, TMK: [4] 2-6-003:001 por. The project area is bounded by Lāwa'i Town on the northwest, by Koloa Road to the north, Aepoeha Reservoir on the southeast, the southeast heading branch of Aka Road on the southwest, and an unnamed stream on the west (a tributary to Lāwa'i Steam that feeds Kaupale and Kumano reservoirs) approximately 2 km north of the coast. The project area is depicted on a portion of the 1996 Koloa U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle (Figure 1). The project is comprised of the two large areas of former cane lands on either side of the Aepo reservoirs. Although the project maps include corridors between the reservoirs that link these two areas, the corridors are only included as they may be used as transmission line easements. No construction work would occur on the roads that cross the reservoir dams.

In late 2016 and early 2017 respectively, the Kauai Island Utility Cooperative (KIUC) awarded a Power Purchase Agreement (PPA) and Interconnection Agreement to AES DE after a competitive bid process in which KIUC sought proposals for a solar PV and energy storage solution to serve the island of Kauai. The proposed project will be constructed and operated by AES DE and its affiliate AES Lawai Solar, LLC, and will consist of an approximately 28 MW direct current (DC) / 20 MW alternating current (AC) ground-mounted solar PV system, coupled with a 20 MW – 5-hour (100 MWh) BESS, and related interconnection and ancillary facilities.

The major project components will include solar PV panels, BESS containers, inverters, and a project substation; these components will occupy a total of approximately 196 acres. In addition, the project will include two construction staging areas, totaling approximately 14 acres.

1.2 Historic Preservation Regulatory Context and Document Purpose

This AIS investigation fulfills the requirements of Hawai'i Administrative Rules (HAR) §13-13-276 and was conducted to identify, document, and make significance assessments of any historic properties. This document is intended to support the proposed project's historic preservation review under Hawai'i Revised Statutes (HRS) §6E-42 and HAR §13-284-6. It is also intended to support any project-related historic preservation consultation with stakeholders, such as state and county agencies and interested Native Hawaiian Organizations (NHOs) and community groups.

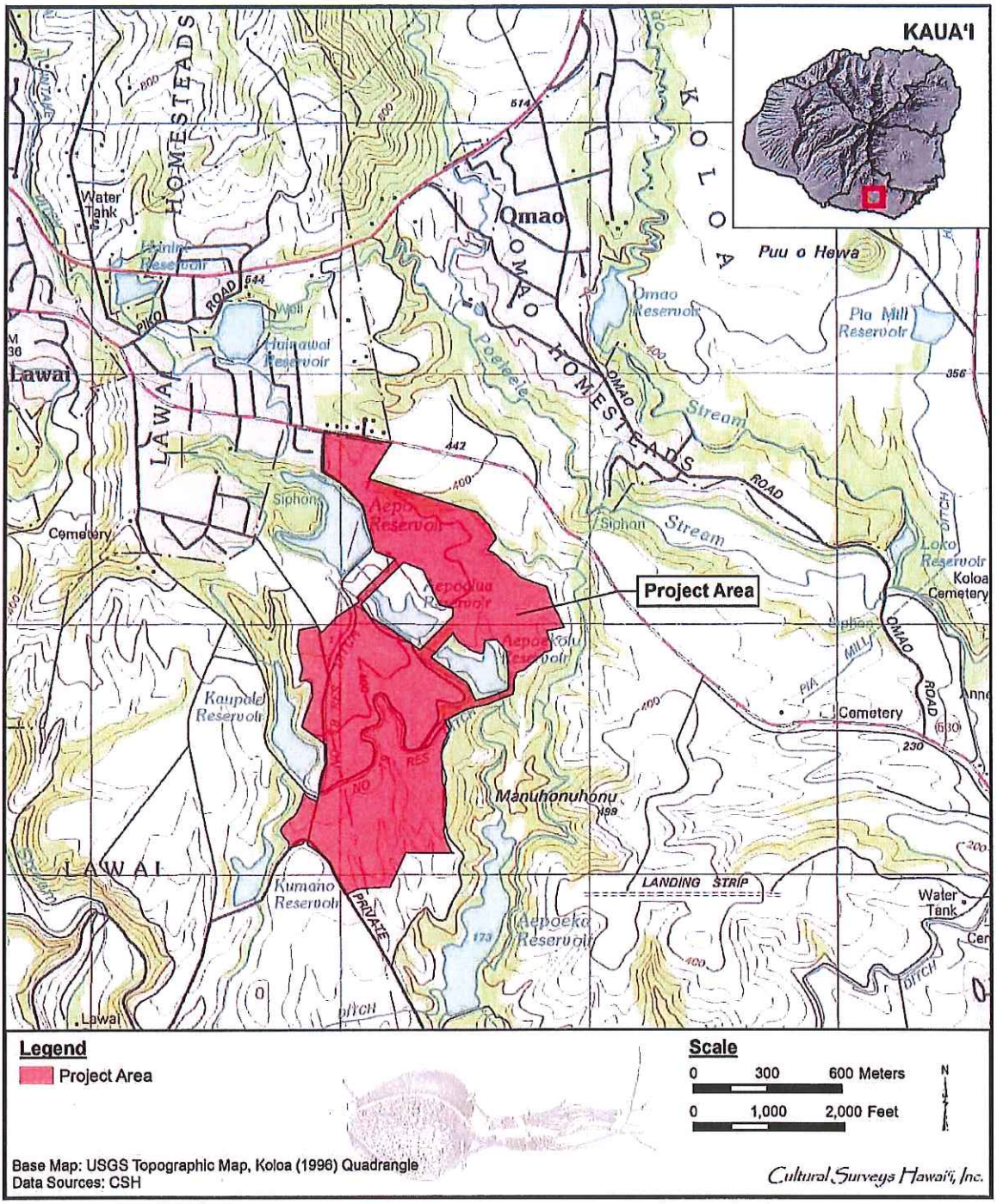

Figure 1. Portion of the 1996 Koloa USGS 7.5-minute topographic quadrangle showing the location of the project area

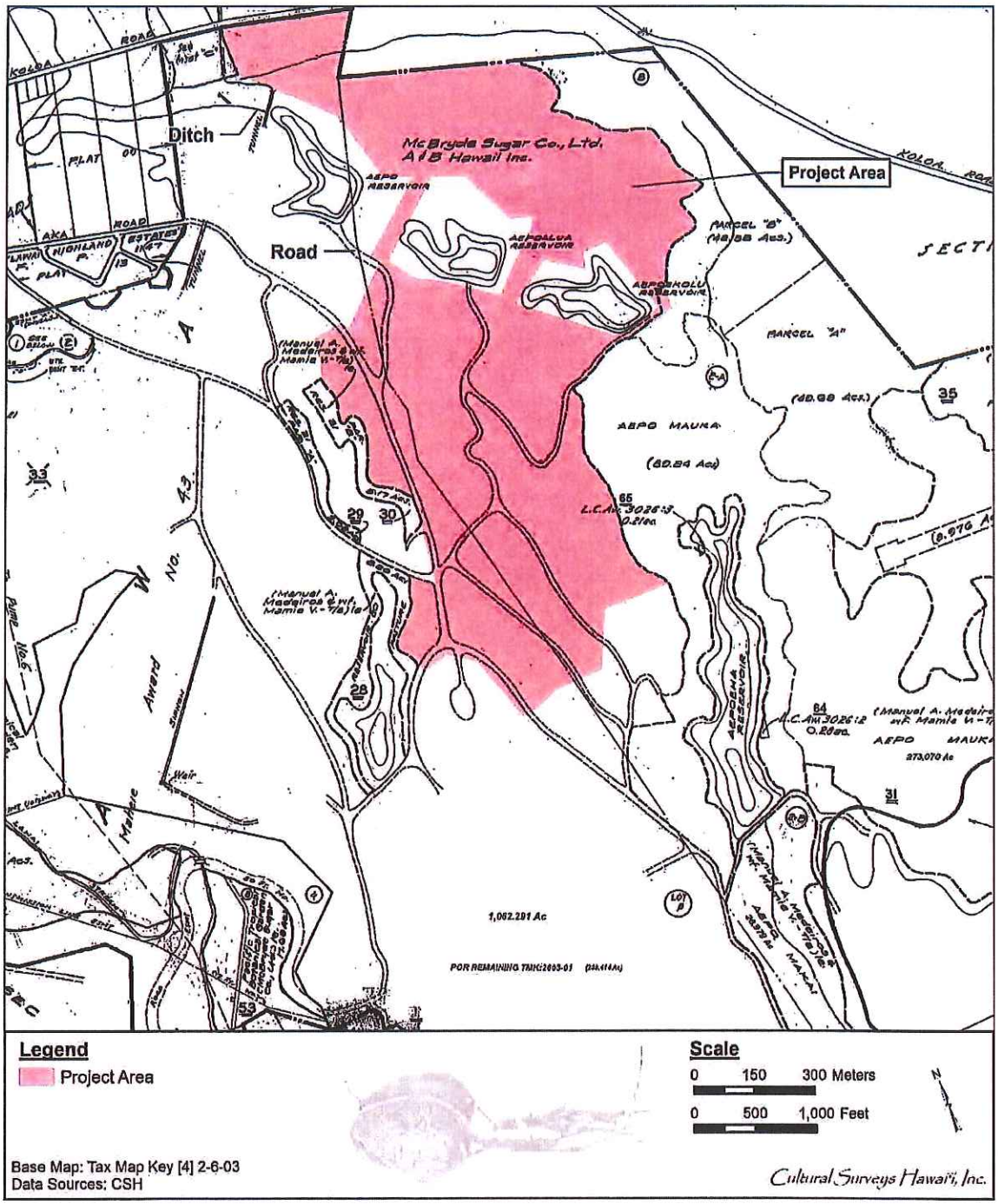

Figure 2. Tax Map Key (TMK) [4] 2-6-003 showing the project area (Hawai'i TMK Service 2014)

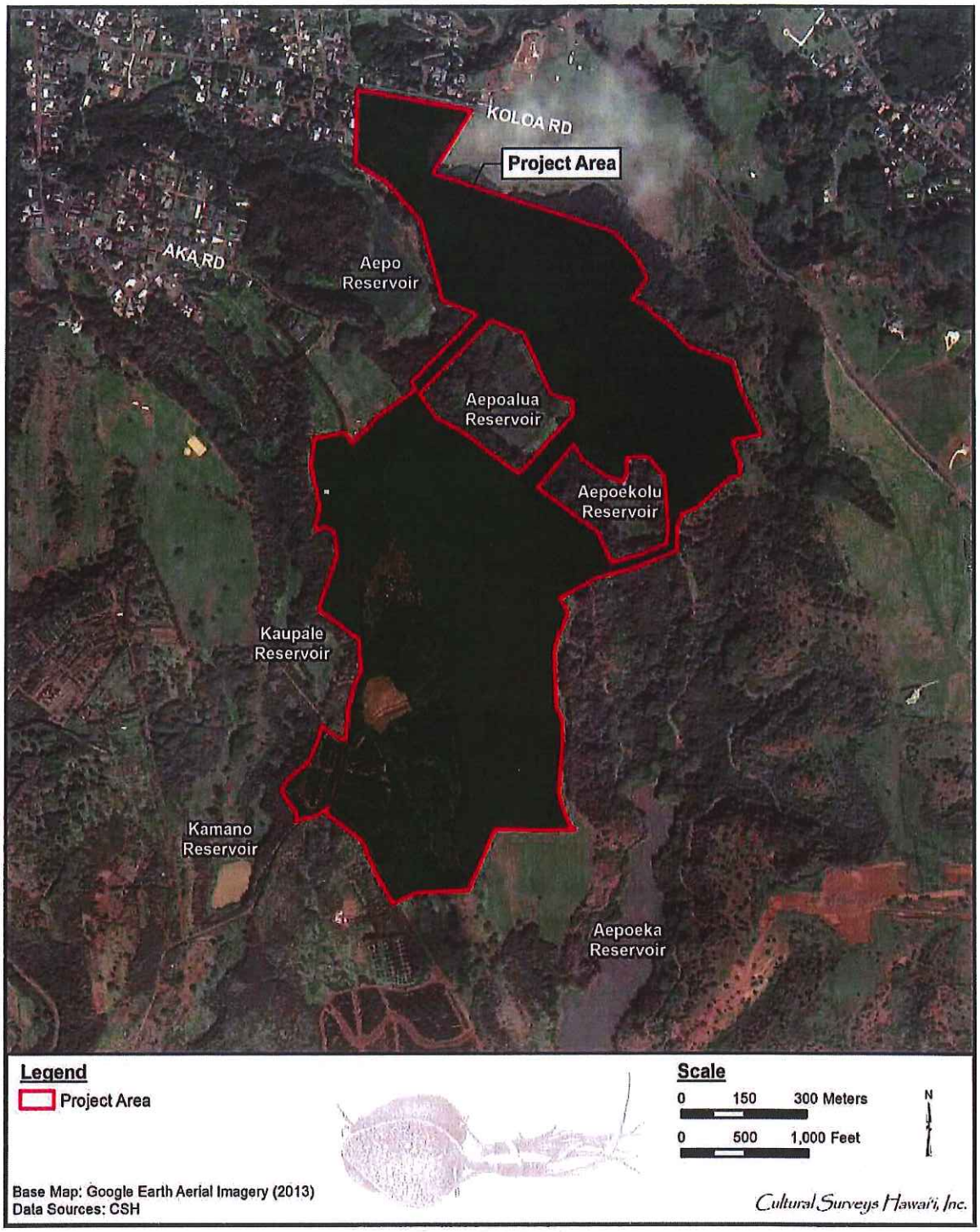

Figure 3. Aerial photo of the project area (Google Earth 2013)

1.3 Environmental Setting

1.3.1 Natural Environment

The rainfall pattern on Kaua'i is characterized by Wai'ale'ale near the island's highest point (Kawaikini, 1,598 m [5,243 feet (ft)]), and a minimum, Kekaha, along the western coast of the island. The rain gauge at Mt. Wai'ale'ale receives more rainfall than any other gauge in the world. With an annual median of 11,415 mm (449 inches), it is one of the wettest locations on earth. Southwest of Wai'ale'ale, the Kekaha annual minimum is less than 500 mm (19.7 inches) (Giambelluca et al. 1986:17).

The project area is located in the *ahupua'a* (traditional land division) of Lāwa'i and Kōloa (see Figure 6) where rainfall is fairly consistent at 5 to 10 inches per month with an annual average of about 50 to 100 inches (Armstrong 1983:62). Average temperatures range from 60 to 84 degrees Fahrenheit (Foote et al. 1972:58). The study area presently includes a variety of vegetation almost entirely comprised of alien species.

In legend each *ahupua'a* on Kaua'i had an associated wind; the *ae* is of Lawa'i, the *malanai* is of Koloa (Fornander 1918:5:96–97). There is at least one named *ua* (rain) of Kōloa, the cold Noe rain (Akana 2015:154).

The *ahupua'a* (traditional land division) of Lāwa'i extends as a large land segment from Kalualea to the sea. It is bordered by Kalaheo Ahupua'a to the west and Kōloa Ahupua'a to the east. Handy and Handy mention Lāwa'i:

> Lawai is the *ahupua'a* next westward from Koloa with a more sizable stream. There were *lo'i* on flats above the sea and along Lawai Stream for a mile or more inland, and beyond this were small *lo'i* in the narrow valley. In upper Lawai Valley there is no evidence of terracing. [Handy and Handy 1972:428]

Before human settlement, the native ecosystem for the Lāwa'i Solar project area consisted of lowland dry and mesic forest, woodlands, shrubland, and some sandy beaches (Juvik and Juvik 1998:122).

The *ahupua'a* of Kōloa extends as a large land segment from Mt. Kāhili to the sea. It is bordered by Lāwa'i Ahupua'a to the west and Weliweli Ahupua'a to the east. Handy and Handy mention Kōloa:

> Koloa had a stream which at its seaward end was called Waikomo (Hidden-water), suggesting that the stream must have gone underground. Three streams in upper Koloa may have watered some taro terraces, since they flow through relatively flat land, although a *kama'aina* told us he knew of none. However, there were a few terraced areas, whose names we obtained, in localities now dry because the water is diverted upstream for sugar-cane irrigation. There were extensive terraces on land now planted with sugar cane near what is now Kuhio Park, seaward from Koloa Valley. There were fresh-water ponds in both Weliweli and Koloa. Possibly this was why Koloa was so named, for *koloa* means duck, and duck were attracted to fresh water. [Handy and Handy 1972:428]

The land of Kōloa and Lāwa'i consist of the lavas of the Kōloa Volcanic Series that are post-erosional lavas, are less than 1.5 million years old and thus date to the Pleistocene. These Kōloa Series flows form a broad apron of predominantly massive flows of *pāhoehoe* lava beneath the project area (Macdonald and Abbott 1974:458).

According to the U.S. Department of Agriculture (USDA) Soil Survey Geographic (SSURGO) database (2001) and soil survey data gathered by Foote et al. (1972), the project area's soils consist of Puhi silty clay loam on the northeast (PnB [3 to 8% slopes], PnC [8 to 15% slopes], and PnE [25 to 40% slopes]), Lihue silty clay on the southwest (LhB [0 to 8% slopes], LhC [8 to 15% slopes], LhD [15 to 25% slopes], and LhE2 [25 to 40% slopes]), Rough broken land (rRR) along the boundary of the southeast and southwest sides as well as the central north portion surrounding Aepo and Aepoalua reservoirs, and Water (W) visible within the reservoirs.

The project area is situated on the tops of the broad interfluvials where the Lihue Silty Clay is found, approximately 3 km (2 miles) from the shoreline at an elevation of approximately 105 to 135 m (350 to 450 ft). The project area straddles the Aepo stream drainage and an unnamed tributary marks the project area's east boundary. Aepo stream enters the sea in Kukuiula Bay at Kaulala Point on the south coast. West of the project area boundary is an unnamed stream gully containing Kaupale and Kumano reservoirs; the stream is a tributary to Lāwa'i Stream about a mile to the west.

Most of the Lāwa'i shoreline is moderately high sea cliff, except for Lāwa'i Kai beach at the mouth of Lāwa'i Valley. The Kōloa shoreline to the east supports more coralline sand beaches interspersed between rocky fingers of basalt lavas behind fringing coral reef formations.

Puhi soils are described as follows:

> . . . well-drained soils on uplands on the island of Kauai. These soils developed in material derived from basic igneous rock. They are nearly level to steep. Elevations range from 175 to 500 feet. The annual rainfall amounts to 60 to 80 inches. The mean annual soil temperature is 73° F. Puhi soils are geographically associated with Lihue and Kapaa soils.
>
> These soils are used for sugarcane, pineapple, truck crops, orchards, pasture, woodland, wildlife habitat, water supply, and homesites. The natural vegetation consists of guava, Java plum, pangolagrass, kikuyugrass, elephantopus, joee, yellow foxtail, and rhodomyrtus. [Foote et al. 1972:115]

Lihue soils are described as follows:

> . . . well-drained soils on uplands on the island of Kauai. These soils developed in material weathered from basic igneous rock. They are gently sloping to steep. Elevations range from nearly sea level to 800 feet. The annual rainfall amounts to 40 to 60 inches. The mean annual soil temperature is 73° F. Lihue soils are geographically associated with Ioleau and Puhi soils.
>
> These soils are used for irrigated sugarcane, pineapple, pasture, truck crops, orchards, wildlife habitat, woodland, and homesites. The natural vegetation consists of lantana, guava, koa haole, joee, kikuyugrass, molassesgrass, guineagrass, bermudagrass, and Java plum. [Foote et al. 1972:82]

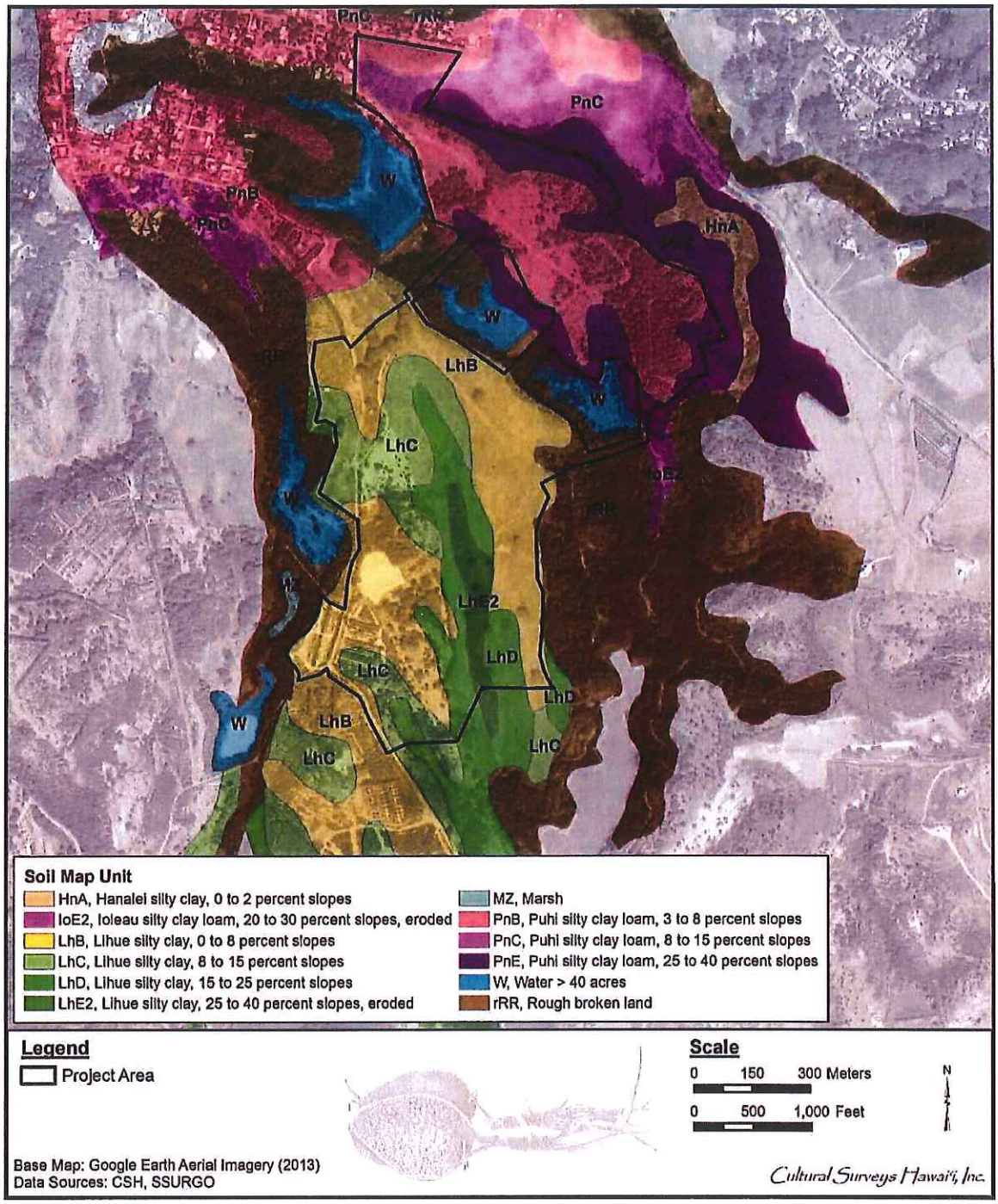

Figure 4. Overlay of *Soil Survey of the State of Hawaii* (Foote et al. 1972), indicating soil types within and surrounding the project area (U.S. Department of Agriculture Soils Survey Geographic Database [USDA SSURGO] 2001)

Rough broken land is described as follows:

> . . . very steep land broken by numerous intermittent drainage channels. In most places it is not stony. It occurs in gulches and on mountainsides on all the Islands except Oahu. The slope is 40 to 70 percent. Elevations range from nearly sea level to about 8,000 feet. The local relief is generally between 25 and 500 feet. Runoff is rapid, and geologic erosion is active. The annual rainfall amounts to 25 to more than 200 inches.
>
> These soils are variable. They are 20 to more than 60 inches deep over solt, weathered rock. In most places some weathered rock fragments are mixed with the soil material. Small areas of rock outcrop, stones, and soil slips are common. Included in mapping were areas of colluvium and alluvium along gulch bottoms.
>
> This land type is used primarily for watershed and wildlife habitat. In places it is used also for pasture and woodland. The dominant natural vegetation in the drier areas consists of guava, lantana, Natal redtop, bermudagrass, koa haole, and molassesgrass. Ohia, kukui, koa, and ferns are dominant in the wetter areas. Puakeawe, aalii, and sweet vernalgrass are common at the higher elevations. (Capability classification VIIe, nonirrigated). [Foote et al. 1972:119]

Using *Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii* (Foote el al. 1972), and their survey of Pineapple management, the project area would belong in the category of "Pineapple Group 5," which consists of the following:

> . . . dominantly clays, silty clays, and silty clay loams. They occur in areas where solar insolation is moderate to high. The slope ranges from 3 to 8 percent. The elevation ranges from near sea level to 2,200 feet. The average annual rainfall is 40 to 70 inches.
>
> Permeability is slow to moderately rapid. Runoff is slow, arid the erosion hazard is slight to moderate. About 1 to 2 inches of water is available per foot of soil. The rooting depth is 20 to 60 inches or more.
>
> All planting and tilling are done across the slope or on the contour. Field roads serve as diversions. Grassed waterways are needed in some areas. Rainfall is ample; no irrigation is needed. In nearly all areas the old plants are plowed under. Crop residue mulch is not used because it increases heart rot and root rot diseases.
>
> Yields are 35 to 45 tons per acre for the plant crop and 25 to 35 tons per acre for the ratoon crop. [Foote et al. 1972:140]

1.3.2 Built Environment

The project area's built environment as seen in Figure 5 consists of former pineapple and cane land which has since been converted to other agricultural crops like coffee, coconuts, and large fan heliconia still visible but not cultivated. Only in the southwest portion of the project area are coffee fields still being cultivated. The project area has been divided as leased land to individuals and used as pasture lands. Cattle and horses, stalls, and corrals are still present scattered within the project area. The area's built environment also includes reservoirs, ditches, and roads.

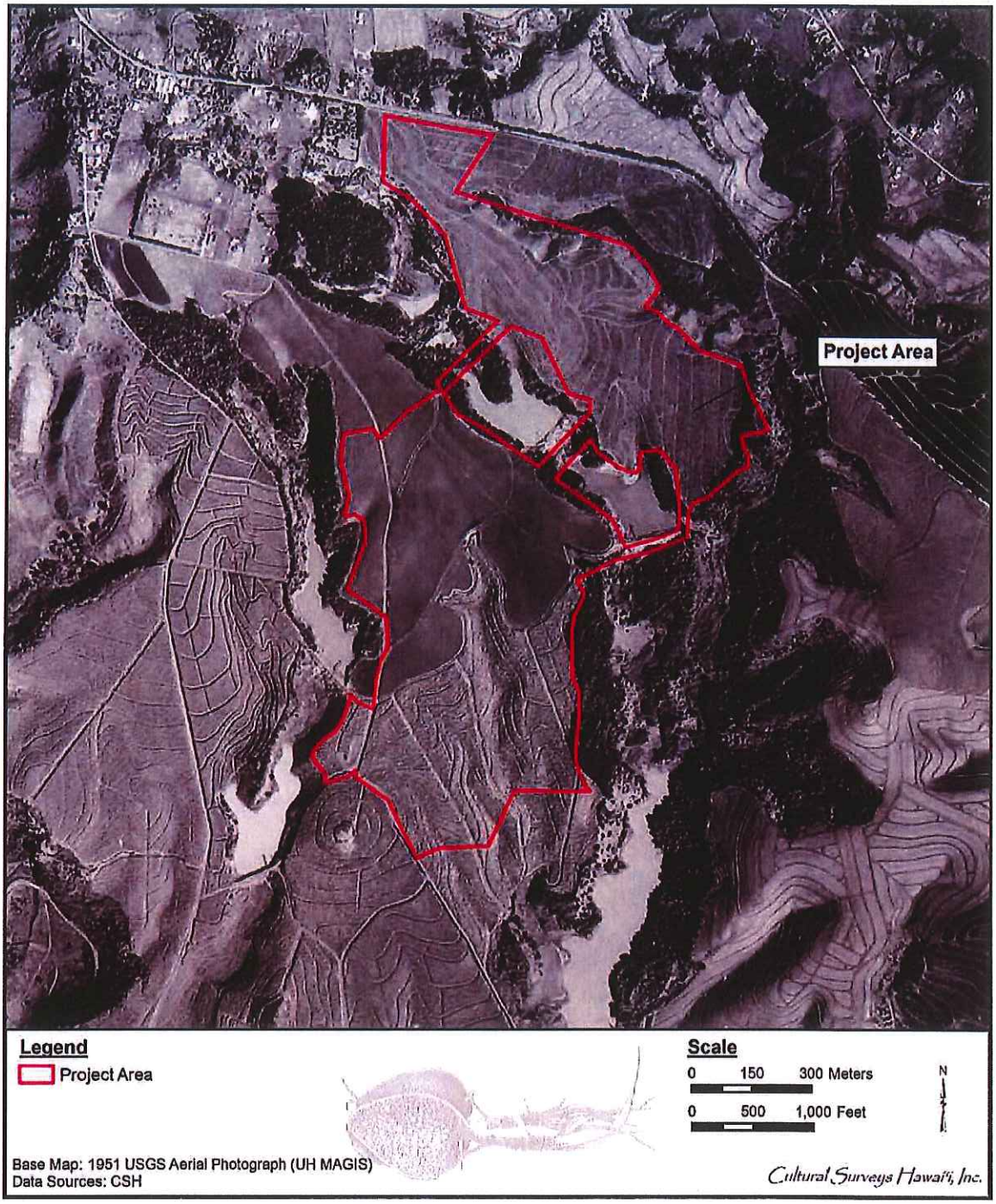

Figure 5. 1951 USGS aerial photograph (UH MAGIS) showing the current project area in cultivated fields

Section 2 Methods

2.1 Field Methods

CSH completed the fieldwork component of this AIS under archaeological fieldwork permit number 17-08, issued by the SHPD pursuant to HAR §13-282. Fieldwork was accomplished between 2 May 2017 and 26 May 2017 by Johnny Dudoit, B.A., Tyler Turran, B.A., and Missy Kamai, B.A., under the general supervision of Hallett H. Hammatt, Ph.D. This work required approximately 19 person-days to complete.

Due to the variable land use considerations within the current project area, the following inventory survey methods were carried out to identify significant historic properties within the project area. In general, fieldwork included 100% pedestrian survey of the project area, identification and recordation of historic properties, and GPS data collection. The locations of all identified archaeological features were recorded with Trimble GPS Pathfinder ProXH mapping-grade (sub-foot accuracy) GPS equipment. GPS points were generally taken at the corners of larger features or at a single datum for smaller features. Long, linear features were mapped with GPS points recorded at selected intervals along the length of the feature. GPS data was post-processed using Trimble Pathfinder Office (v.5.85) software and exported to GIS shapefiles for use in ESRI ArcGIS (v.10.4) GIS software.

2.1.1 Pedestrian Survey

A 100%-coverage pedestrian inspection of the project area was undertaken for the purpose of cultural resource identification and documentation. Depending on vegetation and topography, the pedestrian survey was accomplished through systematic sweeps spaced at 5-10 m intervals in areas of fair to poor ground visibility (knee high to overhead grasses) and 10-20 m intervals in areas of good to excellent ground visibility (exposed soils to knee high grasses). Any historic properties identified within the project area were documented by the following:

1. A detailed written description and evaluation of function, interrelationships, and significance;
2. Digital photographs;
3. Drawings and site profiles to scale when needed using standard tape-and-compass mapping procedures; and
4. Locational information was acquired with the Trimble GPS ProXH survey equipment and post processed with Trimble GPS Pathfinder Office.

Subsurface testing was not undertaken in the project area for this archaeological inventory survey (AIS), as the information collected as part of this effort indicate a very low potential for the presence of archaeological resources in the areas of proposed ground disturbance.

A 1923 McBryde Sugar Company field map (see Figure 19) shows the pervasive presence of sugarcane in and around the Lāwa'i Solar project area within the first decades of the twentieth century. Sugar cultivation on this land continued for almost 100 years until the closing of the McBryde Plantation in 1996, with plowing and chipping probably every two years.

There are no Land Commission Awards (LCA) recorded in the Lāwa'i Solar project area. LCA parcels in Lāwa'i and Kōloa Ahupua'a near the project area are located in the valley bottoms. In

Lāwa'i the nearest LCA are in the Lāwa'i Valley at least 1 km or 0.67 miles west of the project area (see Figure 8). In Kōloa, only one LCA was near the project area in the Aepo Stream valley bottom south of the project area. Use of the forested ridge tops, where the project area is located, during pre-Contact times would probably have been for forest planting or gathering and evidence of this use has most likely been obliterated with the many years of plowing during the sugar plantation activities.

2.1.2 Disposition of Materials

If any materials are collected during the current AIS (excluding human remains and grave goods), they will remain temporarily curated at the CSH office in Līhu'e, Kaua'i. CSH will make arrangements with the landowner regarding the disposition of this material. Should the landowner request different archiving of material, an archive location will be determined in consultation with the SHPD. All data generated during the course of the AIS are stored at the CSH offices.

2.2 Research Methods

Background research included a review of previous archaeological studies on file at the SHPD; review of documents at Hamilton Library of the University of Hawai'i, the Hawai'i State Archives, the Mission Houses Museum Library, the Hawai'i Public Library, and the Bishop Museum Archives; study of historic photographs at the Kaua'i Museum, the Kaua'i Historical Society, Hawai'i State Archives and the Bishop Museum Archives; and study of historic maps at the Survey Office of the Department of Land and Natural Resources. Historic maps and photographs from the CSH library were also consulted. In addition, Māhele records were examined from the Waihona 'Aina database (Waihona 'Aina 2000).

This research provided the environmental, cultural, historic, and archaeological background for the project area. The sources studied were used to formulate a predictive model regarding the expected types and locations of cultural resources in the project area.

Section 3 Background Research

Traditionally, the island of Kaua'i was divided into five *moku* (districts): Halele'a, Kona, Ko'olau, Nāpali, and Puna. However, after the battle of Wahiawa in 1824, the land of Kaua'i was redistributed and district boundaries changed. The new district names became Hanalei, Kawaihau, Līhu'e, Kōloa, and Waimea. The Kōloa District consisted of seven of the 14 *ahupua'a* formerly within Kona Moku. 'Ele'ele was also added to the Kōloa District. Traditionally, 'Ele'ele was an *'ili* (smaller land division) of Hanapēpē Ahupua'a in Kona Moku, but it was separated during the redistribution. 'Ele'ele subsequently became an *ahupua'a* of the Kōloa District, and Hanapēpē became an *ahupua'a* of the Waimea District. Thus, currently the eight Kōloa *ahupua'a* are 'Ele'ele, Wahiawa, Kalāheo, Lāwa'i, Kōloa, Weliweli, Pā'ā, and Māhā'ulepū, from west to east.

This section provides in-depth background of the two *ahupua'a* in which the Lāwa'i Solar project area is located, Lāwa'i and Kōloa (Figure 6).

3.1 *Ka'ao* and *Mo'olelo* (Legends and Stories)

3.1.1 Lāwa'i *Ka'ao* and *Mo'olelo*

3.1.1.1 Kapunohu

A legend is told of a warrior named Kapunohu:

> The Hawaiian hero Kapunohu had a mighty spear called Kanikawi with which he used in battle, defeating many enemies as he traveled around the islands. Eventually he came to Kaua'i, landing at Waimea, but then traveling to Wahiawa and to Lāwa'i. In the area was a giant warrior named Kemamo who threw slingstones and terrorized the neighborhood, so that people were afraid to travel between Kōloa and Nāwiliwili. When Kapunohu was ready to leave Lāwa'i, the people warned him about this warrior. When he met the warrior, he challenged him to a duel, to see which could be thrown farther, Kapunohu's spear or Kemamo's slingstone. Kemamo threw his stone only as far as Anahola in the Kawaiahua district. Kapunohu's spear pierced the ridge at Anahola and flew all the way to Hanalei. Kemamo forfeited his life and Kapunohu became the king of Kawai'i. [Fornander 1918:5:222–224]

3.1.1.1 Lāwa'i Stream

A story is told about a large boulder, the outline of which can be seen in the center of a stream in Lāwa'i (presumably, Lāwa'i Stream). One account tells of the body of Hina, who, after being "ardently pursued," jumped into the water and was immediately turned into stone. According to this legend, the rock was sacred to women only, and the women of the district would stand on the stone to have their "romantic desires" granted (Forbes 1970:2).

Another tale appeared in the 1997 *Honolulu Advertiser*. Mrs. Betty Snowden, whose family had lived in Lāwa'i Kai for over 200 years, recounts the story of the *Menehune* (legendary race of small people who worked at night, building fish ponds, roads, temples):

> One night, as he sat on the hill watching the people in the valley, the chief of the Menehune overheard Manu and his father discussing the need to build a wall in the

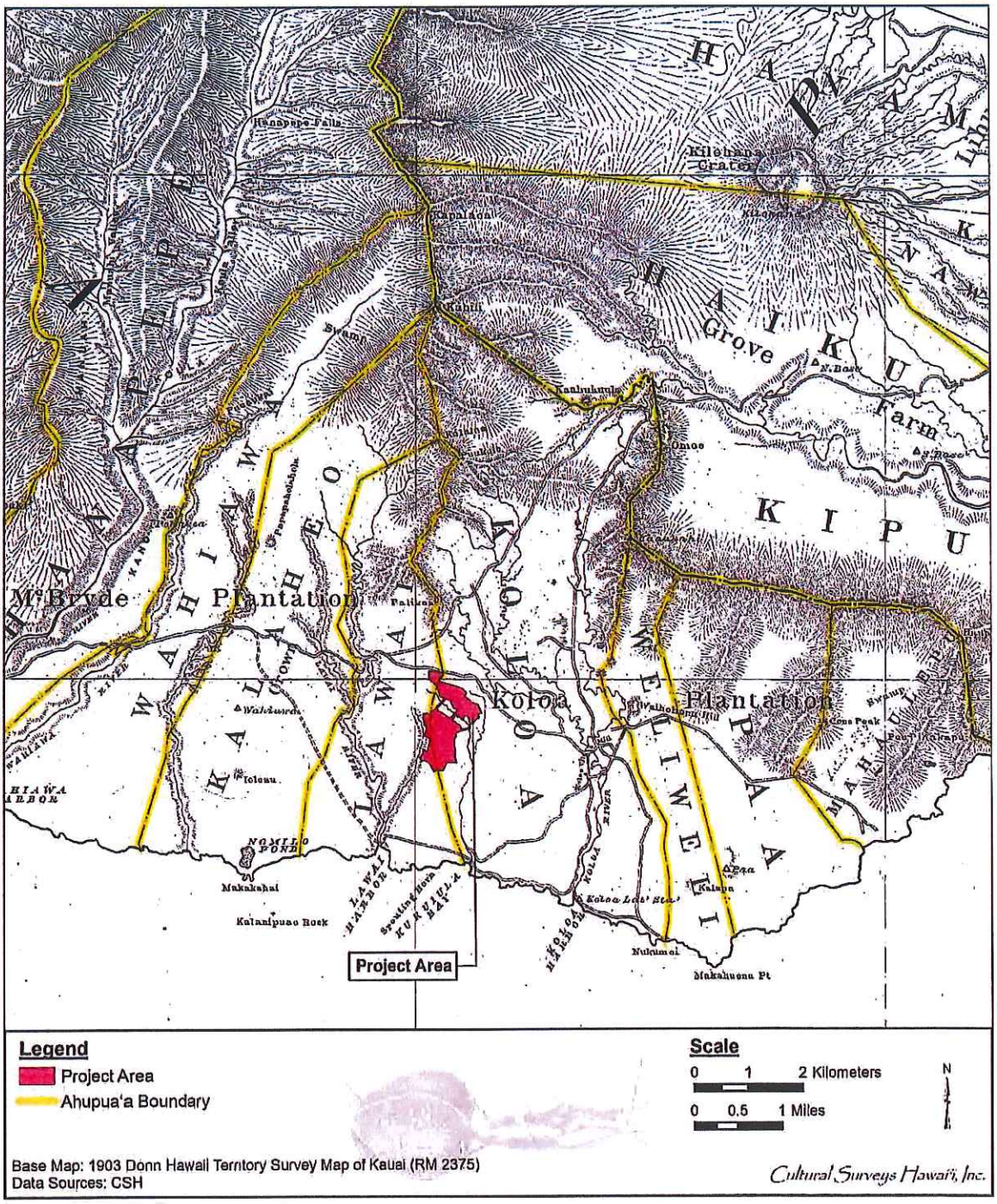

Figure 6. Portion of 1903 Hawaii Territory Survey Map of Kauai (RM 2375), showing the Lāwa'i Solar project area within Lāwa'i and Kōloa Ahupua'a

> stream. Manu's father wanted him to spend the next few days helping with the project.
>
> But Manu and his friends had planned a fishing trip to Ni'ihau and he wasn't happy about the thought of being left behind. Yet, he certainly couldn't ignore his father's request to help. Maybe if he began right away, starting a rock pile . . .
>
> Manu threw himself into the task. He was so busy that he didn't see the Chief of the Menehune until the Chief came right behind him and tugged at his clothing. The Chief made an offer that would benefit them both.
>
> For two pu'olo, or bundles of shrimp the size of two large coconuts, the Menehune would build a wall for Manu and his family.
>
> Manu agreed. For the next two days he surfed, fished and swam with his friends. On the second day he watched the sun setting in the west before he realized that he needed to catch opae. He rushed over to the stream and tried to catch as many shrimp as he could before it got too dark to see but he only collected one bundle full.
>
> That's OK, he thought. It's a large bundle and so that should be enough. He placed the shrimp at the promised location.
>
> That night, the moon rose full and the Menehune crept down the valley. They worked most of the night to build the stone wall in the stream.
>
> When Manu and his family awoke the next morning they found half a wall standing. The Menehune had built only half a stone wall because they had received only half the promised opae. [Snowden 1997:B1]

Betty Snowden concludes her article with the comment that one can still see the neat, perfectly made half-wall built by the *Menehune* of Lāwa'i Kai at the edge of the stream in Lāwa'i Valley.

3.1.1.2 Spouting Horn

A Hawaiian fisherman recounted the following tale to Eric Knudsen near Spouting Horn. A giant *mo'o* (lizard) named Lehu, accompanied by two sisters, swam from Tahiti. The two sister *mo'o* were tired out by the time they reached Ni'ihau and went to sleep on the beach there and became stones. Lehu continued on to Kaua'i and landed at Lāwa'i Beach. After recovering his strength he went over to Kōloa, and his favorite spot was the junction of the Pō'ele'ele and 'Ōma'o rivers. Years later he swam over to Ni'ihau to visit his two sisters but found they were dead, so he swam back to Kaua'i. As he swam along the shore he became fascinated by the fountains of the Spouting Horn. As he explored the lava tube he got caught and could not back out. Supposedly now every time a wave rushes in and wets him all over, he growls and hisses. The Hawaiian fisherman said the lava was too hard for the Hawaiians of long ago to allow them to free him and now using dynamite would only kill him, so he's doomed to stay there forever (Knudsen and Noble 1945:210–211).

3.1.2 Kōloa *Ka'ao* and *Mo'olelo*

3.1.2.1 Kawelo

The early life of the hero Kawelo is also associated with Kōloa. Kawelo grew up in Wailua with two friends, Kauahoa of Hanalei and Aikanaka, the son of the king of Kaua'i. The three were fiercely competitive, and when his grandparents gave Kawelo a canoe, Kauahoa became jealous and so made himself a kite. As soon as he saw the kite, Kawelo wanted one for himself and he asked his grandparents to make him one. He flew the kite next to Kauahoa and the two entangled, which caused Kauahoa's to break away and fall to the earth in Kōloa, at a place named Kaho'oleināpe'a ("the flying of the kites"), after this event (Fornander 1918:5:3–4).

3.1.2.2 Ke Kōloa o Kaikapū

Kaikapū was a *mo'o* (lizard, water sprit) who guarded the Kōloa shoreline keeping residents and visitors away from swimming holes and food sources on the reef and offshore (Wichman 1991:88). Her favorite trick was to hide herself in the rocks near the mouth of Waikomo Stream, listening for sounds of people. When she heard voices, she would swim furiously around the point and grab the fishermen from the rocks or a swimmer near the shore. The residents of Kōloa feared Kaikapū and soon no one came close to the ocean. As a result of Kaikapū's antics, no one ate any fish, gathered the *līpoa* (bladelike, branched brown seaweed; *Dictyopteris plagiogramma*) used to flavor their food, or worked at the salt pans along the shoreline (Wichman 1991:88).

Liko and his grandmother stared at the Kōloa shoreline hopeless and angry. Liko's grandmother sighed:

> 'I would like a taste of i'a ho'omelu,' she said. 'I dream of the delicious pieces of raw hīnālea [wrasse; *Labridae*] fish mixed with red salt, roasted kukui [candlenut; *Aleurites moluccana*] nuts and brown līpoa seaweed.' Even though some people thought this fermented relish had an offensive smell, Liko's grandmother loved to spice her poi [Hawaiian staff of life made with cooked taro corms] with it. [Wichman 1991:88]

Liko decided his grandmother would have what she wanted and headed to the shore. Liko stared at Kaikapū and watched her movements. When it reached low tide and the waves became flat, he looked along the coastline remembering where he once gathered *līpoa* and caught *hīnalea* (wrasse; *Labridae*) (Wichman 1991:89). Kaipapū dove under the water and hid, while Liko stood on a bluff and observed that the *mo'o* did not come up.

> 'Lizard or no lizard,' he muttered, 'I'm going to catch a hīnālea and gather some līpoa.'
>
> Below him a wave surged up through the hole in the rocks. The water poured back into the hole and Liko smiled. He had an idea.
>
> He ran home and got his sport spear made of heavy kauila wood, sharp at both ends and very strong. He picked up his funnel-mouthed hīnālea trap wove from 'inalua vine. He returned to the edge of the rocks, grasped his spear and fish trap and dove into the water, kicking hard to reach some rocks where he anchored the fish trap. His lungs grew tight, hurting from the lack of air, and he surfaced. [Wichman 1991:89]

Liko resurfaced and heard a snort. It was Kaikapū, smiling, and opening her jaws to swallow Liko. He yelled and hit the water vigorously. Kaikapū was surprised at how defiant Liko was but did not hesitate to try and eat him. Opening her jaws to swallow Liko, she instead felt a sharp pain as the *kauila* (native tree in the buckthorn family; *Alphitonia ponderosa*) spear pierced her mouth. Screaming, Kaikapū tossed her head to rid herself of the spear.

Liko's grandmother stood on the shoreline and watched:

> 'Kaikapū!' she called, 'Here I am. Take me instead!'
>
> 'No!' Liko yelled. 'Grandmother, go back!'

Kaikapū was enraged and could only think of Liko who was still in the water. Liko dove down to find the opening in the lava tube that led to the rocky shoreline. He struggled to find the opening. Kaikapū saw his feet fluttering as he slipped into the narrow lava tube. Never considering her own size, Kaikapū chased Liko into the lava tube. At that moment, a surge of water pushed through the lava tube and Liko managed to pull himself onto the rocks where his grandmother met him. Just then another wave surged and a roar resonated through the lava tube. It was Kaikapū. She was stuck in the lava tube. From that day on, the seashore was free for everyone to use.

3.1.2.3 Louma Heiau

Kapueomakawalu built the *heiau* (a pre-Christian place of worship) of Louma, which stood on the mountainside of Ho'oleina-ka-pua'a, "place to throw in the pig." This was beside a small pond *mauka* (inland) of Maulili. Louma was a small *heiau* in which hogs, red fishes, and other sacrifices were offered. It was dedicated to Lono-i-ka-ou-ali'i, the god who had come to Kaua'i with La'a-mai-kahiki in the twelfth century. The stones for this *heiau* were brought from O'ahu. It is said that the *Menehune* did the actual building (Wichman 1998:41).

3.1.2.4 Maulili *Heiau*

Maulili (meaning "constant jealousy") is the name of Kōloa's most important *heiau.* It was first built by Ka-pueo-maka-walu, the son of Kapu-lau-kī. He had his house on the eastern side of this *heiau.* It was a place of human sacrifice, but once Kapueomakawalu died, it was no longer used and its location was lost (Wichman 1998:41). Many years later, when 'Aikanaka had defeated his cousin Kawelo in the battle of stones on the plains of Wahiawa, 'Aikanaka wanted a place to sacrifice the body. No one was sure of it, but a deaf mute led 'Aikanaka to the place. The place was rebuilt and in the morning 'Aikanaka went to sacrifice the body. He found that Kawelo was healed from his wounds and it was 'Aikanaka instead who was sacrificed (Wichman 1998:41).

3.1.2.5 Maulili Pool

Maulili Pool has legendary associations. The Maulili Pool in Waikomo Stream was a sacred place once located in the present Kōloa Town, in the middle of the *ahupua'a.*

One tale is of the gods Kāne and Kanaloa who slept on the eastern bank of Maulili Pool and left the impressions of their forms on the *'āpapa* (coral flat).

> The apapa in this vicinity is called an 'Unu.' and a 'Heiau,' but was never walled in, it is said. [This *heiau* may be the Maulili Heiau]. On the nights of Kāne the drums are heard to beat there, also at the sacred rocks, or unu's, of Opuokahaku and Kānemilohae, near the beach of Po'ipū . . . [Farley 1907:93]

Just below the resting places of Kāne and Kanaloa is the "Pali o Kōloa" or "Cliff of Kōloa," after which the district was possibly named.

Wai-hānau, meaning "birth pool," is a rock on the eastern bank of the pool. There is a *mele* (song or chant) about Waihānau:

> *Aloha wale ka Pali o Koloa,*
> *Ke Ala huli i Waihanau e, hanau.* [Farley 1907:93]

Below Wai-hānau was a rock shaped like a human tongue called "Ka-'ōlelo-o-Hawai'i," "language of Hawai'i." It is said that Kaweloleimakua, who lived at the end of the 1600s, brought this rock to Kaua'i from the island of Hawai'i. According to Wichman (1998), "Kiha-wahine, the fearsome *mo'o* goddess, lived in this pool. When she was in residence, the water turned red and no one dared to swim there" (Wichman 1998:40). "At the southern end of the Maulili pool started two large 'auwais [ditch, canal] that watered the land east and west of Kōloa" (Farley 1907:93).

3.1.2.6 Palila

Palila was the son of Ka-lua-o-pālena and Maihi-iki (Wichman 2003:45). He was taken from his mother since birth and raised by his grandmother, Hina, in the temple of Alana-pō where he trained to be a warrior. He only ate bananas from two patches grown for him. One patch was located along a bank in Wailua, while the other was located in the *mauka* section of Makaleha. Palila trained hard and demonstrated his skills to his grandmother who replied, "Yes, you are halfway through your learning . . . You only use your right arm. Now learn to use your left arm," (Wichman 2003:45). His teachers were astounded but Palila continue to train. On the day he completed his training, he heard a battle echoing over the ridge that divided the plains of Puna from Kōloa. Curious about the commotion, he wanted to ask his grandmother, but she was nowhere to be found. Hina was in the battlefield to warn Ka-lua-o-pālena that his son Palila would be coming to assist:

> Hina said to Ka-lua-o-pālena, 'Be on your guard. Three warriors will come before you today. The first will be Ka-kohu-koko from Moloa'a. He claims it takes forty men to carry his war club. Do not choose him. The second will be Lupe-a-ka-wai-o-Wainiha. He will claim it takes 120 men to carry his war club. Do not choose him. Then will come a third warrior, twirling his war club in his right hand, then in his left hand. He will be the warrior by whose help you will conquer all of Kaua'i.' [Wichman 2003:45]

Ka-hoku-koko and Lupe-a-ka-wai-o-Wainiha both showed up and Ka-lua-o-pālena denied both of them. Both warriors were shamed and returned to their homes. However, Palila did not present himself and Hina's words were not fulfilled. Ka-lua-o-pālena drew up his army and prepared for battle.

Palila continued to follow the noises of the battle over the ridge. He looked down on Kōloa, Weliweli, and Pā'ā and saw two armies facing each other. One army was led by his father, Ka-lua-o-pālena, while the other was led by the Kona chief, Ka-maka-o-ka-lani. Palila stood on a point called Ke-komo-o-ke-anu ("coming of the cold") where he was seen by both armies. From Palila's vantage point, he could see that his father had a standard war formation while Ka-maka-o-ka-lani's was thin. The remainder of the Kona chief's men were hidden in the surrounding forests and ready to ambush Ka-la-o-pālena. Outraged, Palila went to the edge of the forest and with a blow of his

club, knocked down a tree which began a domino effect until the entire forest had fallen. Ka-maka-o-ka-lani's hidden army was then killed. Palila walked into the battlefield to face the Kona chief, challenging him to a one-on-one combat. Palila held his club in his right hand and a dagger in the left. Ka-maka-o-ka-lani did not notice the dagger and died (Wichman 2003:46).

Ka-lua-o-pālena approached his son and stretched out on the ground offering himself as a sacrifice. Palila raised his club, lowered it, rested it on the ground, and leaned on it. The club sank into the ground and as Palila pulled it up, a spring emerged. Hina crossed the field and welcomed Palila. Ka-lua-o-pālena and his army rose, welcoming and thanking Palila. The army turned to the fallen forest where the spring now created a lake, which is still in Kōloa (Wichman 2003:47). Within days a messenger came from the ruling chief of O'ahu who requested Palila's help. Palila had many adventures on O'ahu and Hawai'i, eventually becoming the ruling chief of Hilo. Hina predicted Palila would eventually reign over Hilo, thus naming him after the honeycreeper only found on Hawai'i island.

3.1.2.7 Weoweopilau Stream

The following is a *mo 'olelo* (story) about the small stream called Weoweo-pilau, "rotten bigeye fish," which is on the plains of Kamo'oloa:

> It seems an upland farmer heard that the bigeye fish were running at the beach, so he went down and caught a great number of them. On his way home, an old woman asked him for a few fish but he refused to give her any, saying she could go to the shore and get as many as she wanted. As he continued home, his load of fish became heavier and heavier, the path dustier and dustier, and the sun blazed with heat. When he reached the stream, he put down his fish and plunged in to cool off. When he came out, he smelled that his fish were completely rotten. He then realized that the old lady had been Pele, the volcano goddess, testing his generosity and hospitality. He had been found wanting and was punished. [Wichman 1998:40]

3.2 *Wahi Pana* (Place Names)

Wahi pana (place names) translations presented in this subsection are from *Place Names of Hawaii* (Pukui et al. 1974), unless indicated otherwise. Lloyd Soehren (2013) has lately compiled all the place names from mid-nineteenth century land documents into an online database. He presents spelling and meanings of names from the Pukui et al. book (1974). When no meaning from this book is given, Soehren often suggests meanings for simple names based on meanings from Pukui and Elbert's (1986) *Hawaiian Dictionary*.

3.2.1 *Makani* (Winds)

Each *ahupua'a* on Kaua'i had an associated wind. In the Legend of Kūapāka'a, the hero who controls the wind gourd of La'amaomao chants the winds of Kaua'i. For the area, the winds are the following:

The naulu is of Wahiawa,	*He naulu ko Wahiawa,*
The kuuanu is of Kalaleo [Kalāheo],	*He kuuuanu ko Kalāheo,*
The ae is of Lawa'i,	*He ae ko Lawa'i,*
The malanai is of Koloa,	*He malanai ko Koloa,*
The kuiamanini is of Weliweli,	*He kuiamanini o Weliweli,*

The makahuena is of Kapea,	*He makahuena o Kapea,*
The one-hali is of Manenene,	*He one-hali ko Manenene,*
The koomakani is of Mahaulepu	*He koomakani ko Mahaulepu,*

[Fornander 1918:5:96–97]

When the Hawaiian goddess, Pele, traveled to Kaua'i, she recited the winds of Kaua'i to her lover Lohi'au and his people.

Wahiawa has an Unulau wind . . .	*He Unulau ko Wahiawa. . .*
Kalāheo has a Kiuanu wind	*He Kiuanu ko Kalāheo*
Lāwa'i has an 'Aoa wind. . .	*He 'Aoa ko Lāwa'i. . .*
Kōloa has a Holomālani wind. . .	*He Holomālani ko Kōloa. . .*
Hanaka'ape has an Ulumano wind	*He Ulumano ko Hanaka'ape*
The wind of Makahū'ena [on Ni'ihau]	*Lele ka makani o Makahū'ena,*
flies, the ocean is white with froth.	*kuakea ka moana.*
Weliweli has a Kuimanihi wind. . .	*He Kuimanihi ko Weliweli. . .*
The battling wind is a Kiu,	*He Kiu ka makani paio,*
surging along the steeps	*lele i ka lapa*
The paddle of the fisherman flashes,	*'Ōlapa ka hoe a ka Lawa'i'a,*
it is stormy	*he 'ino*
Pā'ā has a Makahū'ena wind	*He Makahū'ena ko Pā'ā*
Māhā'ulepū has a Pū'ōkū wind	*He Pū'ōkū ko Māhā'ulepū*

[Ho'oulumāhiehie 2008a:16–17; Ho'oulumāhiehie 2008b:16–17]

The *'Ae* is the northeast tradewind, the *Kiu* is a strong wind breaking across the mountains, *Ku'anu* ("releasing coldness") is a strong wind, the *Malanai* is the gently blowing northeast tradewind, *Nāulu* is a sea breeze with heavy mist, *Onehali* was a "sand carrying" sea breeze, and *Ulumano* is a strong wind that blows from the south (Kent 1986:437–443; Pukui and Elbert 1986:289; Wichman 1998:33).

3.2.2 Lāwa'i *Wahi Pana*

According to Kikuchi (1963:39), the name *"lāwa'i"* means "the day to end the fishing tapu." Others believe the name Lāwa'i comes from "lawa a'i" which means "plenty to eat" or "valley of plenty" (Allerton 1972:9). Pukui et al. (1974) do not give a meaning for the name.

The *ahupua'a* of Lāwa'i is bounded by the *ahupua'a* of Kalāheo on the west, Kōloa on the east, the Pacific Ocean on the south, and the Līhu'e-Kōloa Forest Reserve on the north. The *ahupua'a* has as its main geographic feature the deeply dissected Lāwa'i Valley along Lāwa'i Stream. The west side of the valley is framed by high cliffs, as is the river flood plain. The eastern boundary between Lāwa'i and Kōloa is across gently sloping terrain with no natural landscape boundary. Most of the Lāwa'i shoreline is high cliff, except for Lāwa'i Kai beach at the mouth of Lāwa'i Valley. Lāwa'i is separated from Kalāheo on the *mauka* (inland) side by the peak Kapōhākau ("placed rock"; Wichman 1998:36) and at the shore by the western end of Halulu Bay ("to roar, thunder," or named for a legendary man-eating bird; Soehren 2013) at Puehu Point. It then extends along the coast to Lāwa'i Harbor, which is bound on the east side by the coastal point Kalaeoka'īwa ("the point of the frigate bird"; Soehren 2013). The next notable place on the coast is Puki Kai o Lāwa'i, a natural blowhole now called Spouting Horn. The *ahupua'a* ends on the eastern shore of

Kukuiula Bay near the mouth of Aepo Stream, which is within Kōloa. The boundary with Kōloa extends inland to Palikea ("white cliff") peak, Pu'u Kolo, and Kalualea peak.

3.2.2.1 *'Ili* of Lāwa'i

Mid-nineteenth century land documents mention ten *'ili* of Lāwa'i: Haia, Hapaiehu, Ka'ohe ("the bamboo"), Ke'eke'e ("zigzag, angular"; Soehren 2013), Kihakii, Kukuimōkoi, Kuliloli, Mo'o'awalu ("*mo'o* number eight"; Soehren 2013), Papakea, and Pe'ape'akuakui.

3.2.2.2 *Heiau* of Lāwa'i

Three *heiau* are listed for the *ahupua'a*: Niukapukapu Heiau (Site 72; Bennett 1931:116) on top of Niukapukapu hill, Kalohiokapua Heiau (Site 69; Bennett 1931:116) in Lāwa'i Valley, destroyed before Bennett's survey, and Māmalu Heiau (Site 70; Bennett 1931:116) near the mouth of Lāwa'i Valley, destroyed before the 1930s.

3.2.3 Kōloa *Wahi Pana*

The name Kōloa has several derivations. Kōloa is the name for the large, soft Hawaiian sugarcane (*Saccharum officinarum*) once grown by the Hawaiians; Kōloa is also the name of a steep rock, called Paliokōloa, on the banks of Waikomo Stream, from where the *ahupua'a* got its name. This bank of the river was called Kōloa, after the native Hawaiian duck (*Anas wyvilliana*) (Kikuchi 1963:46; Pukui et al. 1974:116).

The Kōloa Ahupua'a is "well watered by constantly flowing streams. Two of these streams, the 'Ōma'o, "green," and Pō-'ele'ele, "dark night," feed the Pīwai (a variety of wild duck) in the area. Where they join, the stream becomes Wai-komo, "entering water," which flows down the center of the land, bringing life to the drier regions toward the seashore. It is so named because from time to time "the stream disappears for a bit before reappearing farther down the slope" (Wichman 1998:40). The *ahupua'a* is watered by several other streams; the Aepo, Waihohonu ("deep water;" named for a hole formed when Palila felled a forest of trees with one stroke; Pukui et al. 1974:222), Weliweli, and the Weoweopilau.

Kōloa is bordered by Lāwa'i Ahupua'a to the west and Weliweli Ahupua'a to the east. The boundary with Lāwa'i ends on the eastern shore of Kukui'ula Bay near the mouth of Aepo Stream and extends inland to the peaks Pu'u Kolo and Kāhili, where it extends along the boundary of Hā'iku Ahupua'a on the *mauka* side. The northeast corner of the *ahupua'a* is at Lā'aukahi ("lone tree"). At the shore, it is separated from Weliweli at a place called Poapoko.

3.2.3.1 *'Ili* of Kōloa

Sixty-six *'ili* are listed in mid-nineteenth century land documents, emphasizing the importance of this well-watered *ahupua'a* and the dense population it could support. The *'ili* are Aea, 'Awikiwiki, Hālāli'i, Halehinahina, Kaakaupuawa, Ka'auwailalo ("the lower ditch"; Soehren 2013), Kaauwailuna ("the upper ditch"; Soehren 2013), Kahoai, Kahoana ("the whetstone"), Kahoiwai, Ka'ili'ili ("the pebble"), Kalehuaoka'ele, Kalua'alamihi, Kamaemae, Kamaloula ("the red loincloth"; Soehren 2013), Kamanomano, Ka'ōhi'a ("the 'ōhi'a tree"; Soehren 2013), Kāpala'alaea ("daub of ocher"; Soehren 2013), Kapalakea (a variety of taro; Soehren 2013), Kapalau, Kapo'o, Kapuna ("the spring"), Kaukahōkū ("the star appears"), Kaulia ("hung, suspended"; Soehren 2013), Kauluolona, Kaunuolono ("the altar of Lono"; Soehren 2013), Kawailehua, Keaku, Keanakaha'ia, Kekui, Kihinui, Kīkīaola ("container acquired by Ola"), Kioea

"bristle-thighed curlew"; Soehren 2013), Kiona ("Zion, or dung heap, privy"; Soehren 2013), Kōloa Hikina ("east Kōloa"; Soehren 2013), Kōloa Komohana ("west Kōloa"; Soehren 2013), Kualu, Kuunameheala, Lapapōhaku ("stone ridge"; Soehren 2013), Lauuluhaa, Lepoakua, Makapala ("sore beginning to heal"), Mākea ("fallow land, or a variety of *kalo* or awa"; Soehren 2013), Malaula, Maneneha'aha'a ("low plantain"), Manini, Ma'uliuli, Mauna Pōhaku, Milohai, 'Ōma'o ("green"), Opuohaku, Palaulalo, Paoa, Pipipi'eu'eu ("lively mollusk, *Theodoxus neglectus*"; Soehren 2013), Poahonu, Pō'ele'ele ("black night"), Pōhakuomakali'i ("stone of Makali'i"; Soehren 2013), Puahehu, Puhaku, Punahelu, Puokahaku, Pu'u Holo, Pu'u o Haku ("Haku hill"; Soehren 2013), Waikomo ("entering water"; Soehren 2013), Wailā'au (sap of plants, or a liquid medicine; Soehren 2013), and Waiohai.

3.2.3.2 *Heiau* of Kōloa

Five *heiau* are listed in Kōloa: Hō'ai (probably "to feed"; Soehren 2013) (Site 75; Bennett 1931:117) at Kūhiō Park on the west bank of Waikomo Stream, Kānehaule (Site 92; Bennett 1931:122) on the east branch of 'Ōma'o Stream, destroyed before Bennett's 1930s publication, Kāneiolouma (Site 81; Bennett 1931:118) on the shore near Kihouna Heiau (Site 80; Bennett 1931:118–119), and Kūhāhāpō ("Kū feeling at night") at Lae o Kahala.

3.2.3.3 Kānehaule *Heiau*

Located in Kaunuieie, Kōloa, the site occupies the *mauka* portions of the *ahupua'a*, along a small tributary of Omao Stream (Bennett 1931:122). Thrum described the *heiau* as "A paved walled enclosure of large size, destroyed some time ago: a heiau where the rites of circumcision were performed" (Thrum 1906:36).

3.2.3.4 Kāneiolouma *Heiau*

The *heiau* was first surveyed by Thomas G. Thrum and later published in *The Hawaiian Almanac and Annual* (1907), which documented *heiau* throughout the Hawaiian Islands. Wendell Clark Bennett also surveyed *heiau* on Kaua'i between 1928 and 1929, later documenting and publishing his finds for Bishop Museum (Bennett 1931:3). Kāneiolouma Heiau is located along the shores of Po'ipū near Kihouna Heiau. Kāneiolouma, being the larger structure of the two, consists of three large sections and four rooms with limestone slabs in the middle section (Bennett 1931:119). Mary Kawena Pukui offers *mo 'olelo* on the structure below:

> O Olouma kekahi haiau, aia no i Koloa, Kauai, mauka ae o Hooleina-ka-puaa, he loko mauka o na hale, a o ka haiau iho e pili pu ana, o Kiha no ke alii nona ia haiau. He unu hai puaa i-a ula a pela aku. O lonoikaoualii ke alii, o Wakea ke kahuna, mai Oahu mai ka pohaku i hana ia ai o ka haiau na ka menehune i hana.
>
> Louma was another heiau, which also stood in southern Koloa on the mountainward side of Ho'oleina-ka-puaa (Place-to-throw-in-the-pig), a pond on the mountainward side of the houses. The heiau was close by. Kiha was the chief to whom it belonged. It was a heiau in which hogs, red fishes etc. were offered. Lonoikaouali'i was the chief and Wakea was the priest who brought the stones from Oahu. The menehune built the heiau. [Pukui 1936]

3.2.3.5 Kihouna *Heiau*

This *heiau* sits near Kāneiolouma Heiau, also located on the shores of Po'ipū. The single-walled enclosed *heiau* consists of walls measuring 4 to 6 ft in height (Bennett 1931:118–119).

> Kihouna Heiau, which is also spelled Kihahouna, is 100 feet by 125 feet and is believed to have been dedicated to fishing and agricultural deities. The walled structure had virtually disappeared until it was reconstructed in 1984. [Friends of the Koloa Community 1985:22]

3.2.3.6 Maulili *Heiau*

Evidence of a rich history within Kōloa is offered in a Lahainaluna document. This document appears to be based on an oral historical project. On 7 September 1885 a student from Lahainaluna Schools (HMS 43 #17) interviewed Makea—"a native who is well acquainted with Koloa"—and recorded "what she said about the well-known places in the olden times." More than 64 years after the abolition of the *kapu* (taboo, prohibition) system and almost as many years of contact with westerners, Makea could describe, in detail, 14 *heiau* within the Kōloa area, for example:

> Maulili was the first heiau of south Kōloa. Kapulauki was the first chief of Kōloa, Kiha came next. That is the chief I know of. He was a ruling chief of Kaua'i in the olden days, when the heiau was standing there. It had already been built and men had been sacrificed on its altars. This Kiha was called Kiha-of-the-luxuriant-hair. Another name for him was Kakae and another was Ka-pueo-maka-walu (Right-eyed-owl).
>
> This heiau was also famous for this reason—it was the first heiau to which Kawelo was carried after he had swooned in Wahiawa, in the battle where stones were used as missiles.
>
> The location of this heiau was not known, but a deaf mute knew and it was he who pointed it out to the chiefs, and that is how it was rediscovered in the olden days. Kiha lived on the eastern side of the heiau and 'Aikanaka lived on the northeastern side. Aikanaka, was the one with whom Kawelo fought and he was the owner of this heiau at that time. [Lahainaluna School 1885:165]

3.2.4 *'Ōlelo No'eau* (Proverbs)

Mary Kawena Pukui is known as one of the greatest contributors to the preservation of the Hawaiian language, a scholar, and ethnographer. Hawaiian knowledge was shared by way of oral history and many often competed in poetic battles of wit to see who could ascribe the most *kaona* (layered hidden meaning) to the simplest phrase. The following section draws from Pukui's knowledge of Hawaiian folk tales, proverbs, and sayings to describe the *'āina* (land) in the project area. The *'ōlelo no 'eau* is first described, followed by the Hawaiian phrase and English translation.

Kōloa *'Ōlelo No 'eau* #47:

The proverb uses a play on words to express the feeling of drunkenness.

Aia i Kōloa.

Is at Kōloa.

A play on *kō* (drawn) and *loa* (long)—drawn a long way under. Drunk.

[Pukui 1983:8]

3.3 Traditional and Historical Accounts

3.3.1 Pre-Contact

Chronological analysis from Kōloa and the two neighboring *ahupua'a*, Pā'ā and Weliweli, suggests an early initial occupation within the Kōloa District of ca. AD 535 (Walker and Rosendahl 1990:131). Initial occupation probably was characterized by temporary and/or recurrent occupation. From AD 600-1400, settlements in the Kōloa area were still limited to the coast. By AD 1040, lava tubes were used for burial and temporary habitation in the inland areas of Kōloa (Hammatt et al. 1999:7).

However, it should be noted that recent analysis of radiocarbon dates in Hawai'i suggest more consensus for colonization of the Hawaiian Archipelago between AD 750 and AD 1000 (Rieth and Cochrane 2015). Also, "Paleoenvironmental sequences from O'ahu and Kaua'i have recorded vegetation change and increases in microscopic charcoal consistent with human activities between ~1050 and 850 cal. B.P. [~AD 900 and 1100]" (Rieth and Cochrane 2015:9). (All dates from the individual analyses as cited have not been independently verified or validated during the background research process and should be understood as provisory.)

One Hawaiian tradition says the islands of Hawai'i were first settled by the chief Punanuikaianaina, who came to the Puna District of Kaua'i from the Marquesas around AD 1000 to 1100 (Fornander 1996:45–46). The early settlers of the Hawaiian archipelago would have been especially attracted to the windward side of Kaua'i, which boasted large river valleys supporting a vast inland region of irrigated pondfields for *kalo* (taro) cultivation that became the agricultural core of Kaua'i. The greatest of these river valleys were around Wailua and Hanamā'ulu streams. Excavation data near the mouth of Hanamā'ulu Stream indicates early occupation of the area between AD 1170 and 1400 (State Inventory of Historic Places [SIHP] # 50-30-11-1839, Walker et al. 1991). This area was richly endowed with agricultural wealth and was a major residential and religious center for the nobility (Kirch 2010:171). A number of prominent *heiau* and a sacred birthing site were located in the central Wailua area (Bennett 1931:125–128). In approximately AD 1450 (a time estimate based on an average length of generational intervals in chiefly genealogies), the Kaua'i *ali'i* (chief) Manokalanipō is credited "for the energy and wisdom with which he encouraged agriculture and industry, executed long and difficult works of irrigation, and thus brought fields of wilderness under cultivation" (Fornander 1996:93).

On the island of O'ahu in approximately AD 1490, the *'aha ali'i* (council of chiefs) chose Mā'ilikūkahi, an *ali'i kapu* (sacred chief) who was born at the sacred site of Kūkaniloko in the uplands of Waialua, to be the new *ali'i nui* (paramount chief) of O'ahu. After his paramountship was installed at the *heiau* of Kapukapuākea in central Waialua, Mā'ilikūkahi instituted an explicit land division and administration structure (Kirch 2010:84–90). Although Kaua'i remained politically independent during this time period, a hierarchical land system was imposed.

3.3.2 Early Historic Period

The first written accounts of Kaua'i are from travelers, missionaries, and surveying expeditions. Missionary accounts of the first half of the nineteenth century provide the majority of

the early written records for this particular part of Kaua'i. The earliest explorers, like Cook and Vancouver, used Waimea for anchorage and victualing, with no mention made of Kōloa or Lāwa'i. However, their descriptions of well maintained, watered agricultural systems on this dry leeward coast are echoed in the early descriptions of Kōloa. Cook notes, "What we saw of their agriculture, furnished sufficient proofs that they are not novices in that art. The vale ground has already been mentioned as one continuous plantation of taro, and a few other things, which all have the appearance of being well tended to" (Cook 1784:244). Vancouver's description records "the low country which stretches from the foot of the mountains toward the sea, occupied principally with the taro plant . . . interspersed with some sugar-cane of luxuriant growth and some sweet potatoes" (Vancouver 1798:170).

Damon (1931:401) wrote about Bingham's 1824 observations from his memoir, *A Residence of Twenty-One Years in the Sandwich Islands*, published in 1847. Damon relates Rev. Hiram Bingham's accounts after travelling east from Hanapēpē, taking in a fertile land he described as "mostly open, unoccupied and covered with grass, sprinkled with trees, and watered with lively streams that descend from the forest-covered mountains and wind their way along ravines to the sea,—a much finer country than the western part of the island."

The earliest documentation of Kōloa district population appears in the 1850s when missionary censuses recorded a total population of 1,296 (Schmitt 1977:12). A population distribution map by Coulter (1931) (Figure 7) indicates the population of Kaua'i ca. 1853 "was concentrated chiefly on the lower flood plains and delta plains of rivers where wet land taro was raised on the rich alluvial soil" (Coulter 1931:14).

> The area about Koloa in the southeast was also well populated. Koloa was a port of call for whaling vessels 'to recruit for the Polar Seas.' There 'calabashes of poi, raw fish, bunches of bananas, and bundles of sugar cane . . . [were] offered for sale to the foreigner.' There was a sugar cane plantation of 2,000 acres in this district, the proprietor of which 'was realizing at least one ton per acre of capital sugar.' Tidal flats in this vicinity were used for, evaporating sea water to obtain salt. [Coulter 1931:15–16]

By 1872, the population of Kōloa bottomed out at 833, and then began steadily increasing to 1,500 in 1884, 1,835 in 1896 and 4,564 by 1900 (Schmitt 1977:13).

Handy and Handy (1972:152) note that in the early post-Contact period (post-1778), the leeward coast from Waimea to Wailua (including Kōloa) was noted for the inland plantations of breadfruit, bananas grown along the gulches, sweet potatoes and yams grown in the uplands and valleys, and extensive taro terraces throughout the *ahupua'a*. On Kaua'i, the favored places for coconuts were Kōloa and Lāwa'i (Handy 1940:193). Handy (1940) states,

> Upland kula lands that were famous for their sweet potatoes were Kukuiolono above Lāwa'i (the present park covering the McBride [*sic*] estate) and the elevated kula lands east of Wahiawa Stream. I was unable to obtain any information as to the uplands of Kalihi and Kilauea, but this and much of the kula land from here to Kealia is the same type of terrain and presumably was once used to some extent for growing sweet potatoes by taro planters in these districts. A kamaaina of Wahiawa says that inland of the cliff named Kawaikapuluna, the people used to have taro patches in the gulch, while their houses and potato patches were on the kula land

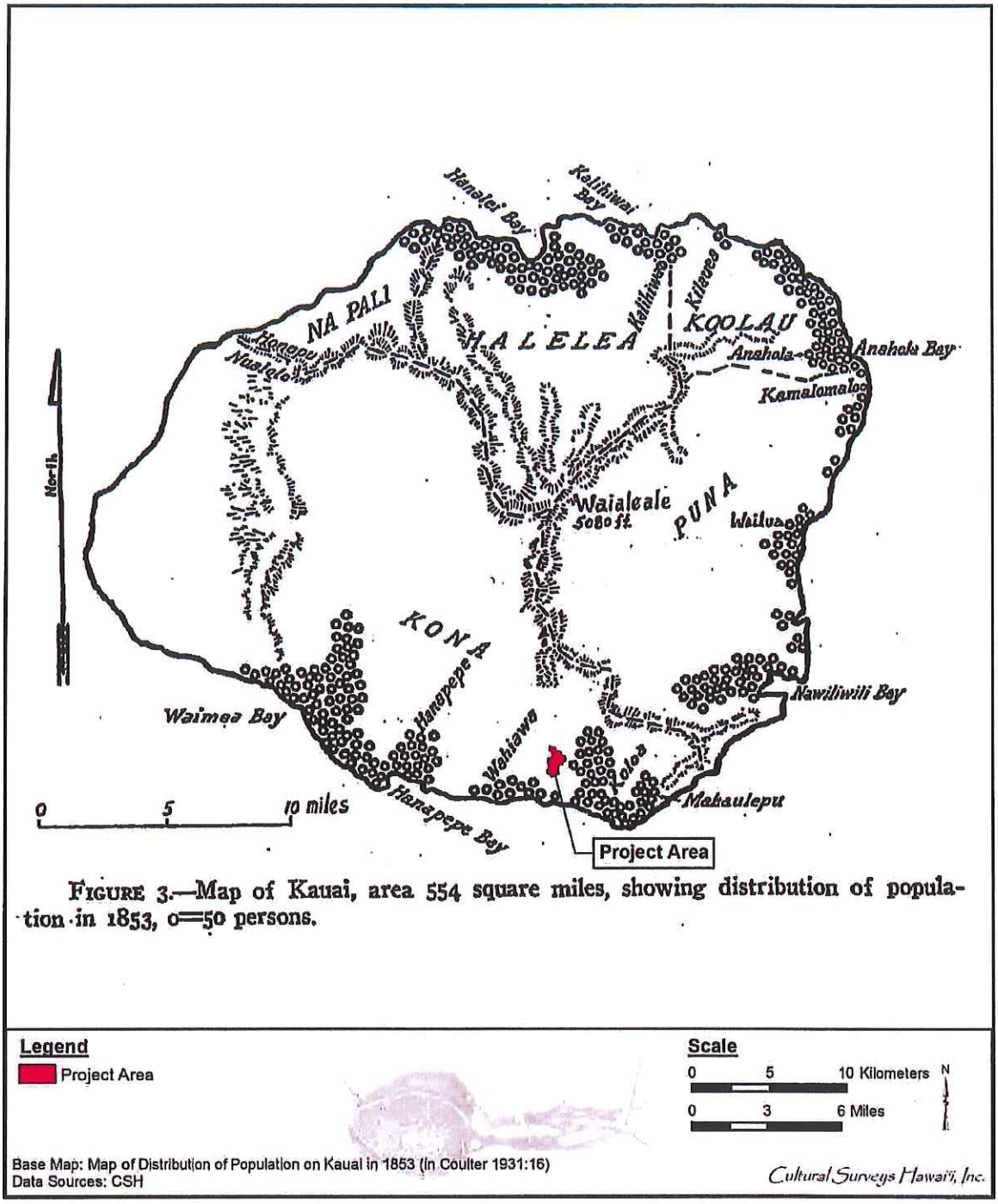

Figure 7. Map showing population estimate for Kaua'i in 1853 (in Coulter 1931:16)

> above, bordering the gulch on either side. I was told this arrangement was typical also of Nawiliwili, and presumably also of Hanamaulu, Hanapēpē, Makaweli, and Waimea in the lower sections of their canyons [Handy 1940:154]

3.3.2.1 Lāwa'i

In Handy's survey of agricultural remnants in Lāwa'i, he found a few taro patches on flats near the sea, and also abandoned *lo'i* on terraces along lower Lāwa'i Stream (Handy 1940:66), suggesting dryland agriculture along the coast and irrigated taro cultivation along the lower slopes of the Lāwa'i Stream. He could not find any terraces along the upper reaches of the stream, even though there was flat land that could have been utilized (Handy 1940:65).

3.3.2.2 Kōloa

In the pre- and early post-Contact periods, Kōloa had a field system that covered much of the coastal plain, fed by its many streams and a complex of terraces and ditches (Handy 1940:65).

A dispute over the northern boundary of Kōloa Ahupua'a in 1874 led to a hearing before Duncan McBryde, the Commissioner of Boundaries for Kaua'i. One native witness, Nao (who describes himself as born in Kōloa but presently living in Ha'ikū), in order to show that Hoaea (the area in dispute) was indeed at the northern boundary of Kōloa, testifies: "At Hoaea tea [*sic*] leaves were hung up to show that there were battles going on" (Boundary Commission, Kaua'i, 1874:1:124). That there was a traditional "warning system"—well-known to all natives—suggests Kōloa, throughout its history, may well have been the scene of some serious conflicts—serious enough and perhaps often enough to warrant devising such a system.

Bernice Judd, writing in 1935, summarized most of what was known of the traditional Hawaiian life of Kōloa before the advent of large-scale sugar cultivation:

> In the old days two large 'auwai or ditches left the southern end of the Maulili pool to supply the taro patches to the east and west. On the kuāunas [embankments] the natives grew bananas and sugar cane for convenience in irrigating. Along the coast they had fish ponds and salt pans, ruins of which are still to be seen. Their dry land farming was done on the kula (dry land), where they raised sweet potatoes, of which both the tubers and the leaves were good to eat. The Hawaiians planted pia (arrowroot) as well as wauke (paper mulberry) in patches in the hills wherever they would grow naturally with but little cultivation. In the uplands they also gathered the leaves of the hala (screwpine) for mats and the nuts of the *kukui* (candlenut) for light. [Judd 1935:53]

By the early 1800s, Kōloa Landing had become the principal port of Kaua'i. Shipments of North American furs and pelts to Asia depended on the provisioning of ships at Kōloa Landing, as well as other Hawaiian ports. As the fur trade grew, markets in China became aware of sandalwood (*Santalum* sp.) grown in the Hawaiian Islands. The shipment of most of Kaua'i's sandalwood to Asia took place at Kōloa Landing, until the supply of the fragrant wood was exhausted around 1830 (Donohugh 2001:63–64).

Accounts by visitors and settlers at Kōloa focused on the early westerners' own concerns—religious and commercial—as these issues appeared within the historical record of Kōloa in the

1800s. However, scattered throughout the accounts are occasional references to the Hawaiians of Kōloa that may give some insight into their lives.

The American Board of Commissioners for Foreign Missions (ABCFM) missionary Samuel Whitney, in an article in the *Missionary Herald* (June 1827:12), described a visit to Kōloa with Kaikio'ewa, the governor of Kaua'i, in 1826:

> The people of this place were collected in front of the house where the old chief lodged in order to hear his instructions. After a ceremony of shaking hands with men, women, and children they retired . . .
>
> Our company consisted of more than a hundred persons of all ranks. The wife of the chief, with her train of female attendants, went before. The governor, seated on a large white mule with a Spaniard to lead him, and myself by his side, followed next. A large company of aipupu [*'ā'īpu'upu'u*], cooks, attendants came on in the rear. [*Missionary Herald* 1827:12]

Whitney's account suggests something of the esteem in which the local populations held the *ali'i* and the scale at which the *ali'i* carried out their functions. An even grander view of that esteem was provided in an account of a later visit by an *ali'i* to Kōloa. John Townsend, a naturalist staying in Kōloa in 1834, described a visit by Kamehameha III (Palama and Stauder 1973:18):

> In the afternoon, the natives from all parts of the island began to flock to the king's temporary residence. The petty chiefs, and head men of the villages, were mounted upon all sorts of horses from the high-headed and high-mettled California steed, to the shaggy and diminutive poney [*sic*] raised on their natives hills; men, women, and children were running on foot, laden with pigs, calabashes of *Poe* [*sic*], and every production of the soil; and though last certainly not least, in the evening there came the troops of the island, with fife and drum, and 'tinkling cymbal' to form a body guard for his majesty, the king. Little houses were put up all around the vicinity, and thatched in an incredibly short space of time, and when Mr. Nuttall, and myself visited the royal mansion, after nightfall, we found the whole neighborhood metamorphosed; a beautiful little village had sprung up as by magic, and the retired studio of the naturalists had been transformed into a royal banquet hall. [Palama and Stauder 1973:18]

In 1835, Thomas Nuttall and John K. Townsend, two American naturalists, visited the Kōloa area. They noted "fields of taro, yam, and maize (possibly sugarcane), irrigation networks and sweet potato patches in the dryer areas" (Townsend 1839:206).

On 31 December 1834, Peter Gulick and his family arrived in Kōloa. Apparently the first foreigners to settle in the *ahupua'a,* they initiated the process of rapid change that reshaped the life of Kōloa in the nineteenth century. In 1835, a 30 by 60 ft grass house was erected as a meeting-house and school near the Maulili Pond. Mr. Gulick cultivated sugarcane and collected a cattle herd for the Protestant Mission. In 1837, a 45 by 90 ft adobe church was built where Kōloa Church stands today, and the first mission doctor, Thomas Lafon, arrived to assist Mr. Gulick (Damon 1931:179, 187). The Kōloa mission station apparently flourished immediately. Navy Lieutenant Charles Wilkes, a member of the U.S. Exploring Expedition, during his visit to Kōloa in 1840 recorded the following:

> The population in 1840, was one thousand three hundred and forty-eight. There is a church with one hundred and twenty-six members, but no schools. The teachers set apart for this service were employed by the chiefs, who frequently make use of them to keep their accounts, gather in their taxes &c. The population is here again increasing partly by immigration, whence it was difficult to ascertain its ratio. [Wilkes 1845:64]

Other sources, however, give different population figures for Kōloa during the first half of the nineteenth century. In 1834, according to a report by missionaries on Kaua'i, the inhabitants of the *ahupua'a* numbered 2,166. An article in the *Pacific Commercial Advertiser* 21 December 1867 estimated the population in 1838 was about 3,000 (though, by 1867, it had been reduced to a third of that number). James Jackson Jarves, who visited Kōloa and Kaua'i for nine months during the early 1840s, recorded the following:

> Kōloa is now a flourishing village. A number of neat cottages, prettily situated amid shrubbery have sprung up, within two years past. The population of the place, also, has been constantly increasing, by emigration from other parts of the island. It numbers, now, about two thousand people, including many foreigners, among whom are stationed a missionary preacher, and physician, with their families. [Jarves 1844:100]

Kōloa Village and Kōloa Landing, at the mouth of the Waikomo Stream, became flourishing commercial centers as trade with Americans and Europeans grew. An estimate in 1857 stated that "10,000 barrels of sweet potatoes were grown each year at Koloa, and that the crop furnished nearly all the potatoes sent to California from Hawaii" (Judd 1935:326). Sugar and molasses were also chief articles of export. Whalers used the Kōloa "Roadstead" from 1830 to 1870, and took on provisions of squashes (pumpkins), salt beef, pigs, and cattle (Damon 1931:176). Hawaiians grew the pumpkins on the rocky land north of the landing. There were also numerous salt pans along the shore near the landing that were used to make salt (Palama and Stauder 1973:20).

Another major area of commercial enterprise was associated with the whaling industry at Kōloa Landing. Accounts of visitors suggest the inhabitants of Kōloa took advantage of their nearness to the landing to participate in the booming trade of the port. An article in the *Pacific Commercial Advertiser* 19 February 1857 described the salient characteristics of the port at mid-century and mentions the following:

> The anchorage is an open roadstead, the tradewind blowing along and a little off shore. During the prevalence of trade it is safe for ships to anchor, but they rarely do so, preferring to procure their supplies 'lying off and on'. The anchorage for schooners is close to shore, in four to six fathoms of water, where it is somewhat sheltered from the wind by a bluff. Owing to the force of the swell and the suddenness which the south wind sweeps around the head lands of the island, and the want of proper buoys, a number of coasting vessels have been wrecked of late years in this port. For the trade of the port there is a small rude pier constructed which might be improved at no greater outlay of labor. From the landing there is a good carriage road to the town, distant about two miles. Large quantities of firewood, bullocks and sweet potatoes are furnished to whalers in this port, and these chattels can no where be procured cheaper or better. It is estimated that 10,000

> barrels of sweet potatoes are cultivated annually here, which are thought to be the best on the islands. Nearly all the potatoes furnished for the California market are produced here . . . Sweet potatoes, sugar and molasses constitute the chief trade of the port. [*Pacific Commercial Advertiser* 19 February 1857]

Kōloa became the official port of entry for Kaua'i in the 1850s and participated in the profitable whaling industry trade whose peak years ran from the 1830s to the 1860s

3.3.3 The Māhele and Kuleana Act

In 1845, the Board of Commissioners to Quiet Land Titles, also called the Land Commission, was established "for the investigation and final ascertainment or rejection of all claims of private individuals, whether natives or foreigners, to any landed property" (Chinen 1958:8). This led to the Māhele, the division of lands among the king, the Government of Hawai'i, the *ali'i*, and the common people, which introduced the concept of private property into Hawaiian society. In 1839, Kamehameha III divided the land into four divisions: Crown Lands reserved for himself and the royal house; Government Lands set aside to generate revenue for the government; Konohiki Lands claimed by *ali'i* and their *konohiki* (supervisors); and *kuleana,* habitation and agricultural plots claimed by the common people (Chinen 1958:8–15).

Upon the confirmation of a land claim, the *ali'i* were required to pay a commutation fee to the government. This commutation (meaning a substitution of one form of payment or charge for another) could be satisfied with a cash payment or the return of land of equal value. This payment was usually one-third of the value of the unimproved land at the date of the award (Chinen 1958:9–12). The *ali'i* usually retained some of the land they were awarded and then returned some of the land to pay the commutation fee. The returned land usually became Government Land. In 1851, Government Lands became available for purchase "in lots of from one to fifty acres in fee simple, to residents only, at a minimum price of fifty cents per acre" (Laws of 1851). These costs did not include the survey fee, which was to be paid by the interested buyer.

Under the Kuleana Act of 1850, the *maka'āinana* (commoners) were required to file their claims with the Land Commission within a specified time period in order to apply for fee-simple title to their lands. The claim could only be filed after the claimant arranged and paid for a survey, and two witnesses testified that they knew the claimant and the boundaries of the land, knew that the claimant had lived on the land since 1939, and knew that no one had challenged the claim. Then, the *maka'āinana* could present their claims to the Land Commission to receive their Land Commission Award (LCA) (Kame'eleihiwa 1992).

Not everyone who was eligible to apply for *kuleana* lands did so and not all of the claims were awarded. Some claimants failed to follow through and come before the Land Commission, some did not produce two witnesses, and some did not get their land surveyed. In addition, some *maka'āinana* may have been reluctant to claim *'āina* (land) that had been traditionally controlled by their *ali'i*, some may have not been familiar with the concept of private land ownership, and some may have not known about the Māhele, the process of making claims (which required a survey), or the strict deadline for making claims. Further, the Land Commission was comprised largely of foreign missionaries, so the small number of claimants and awards may reflect only those *maka'āinana* who were in good standing with the church. Significantly, the surveying of land was not standardized (Kame'eleihiwa 1992:296–297).

A total of 14,195 claims were filed and 8,421 awards were approved to about 29% of the 29,220 adult Native Hawaiian males living at the time of the Māhele, averaging 3 acres each (Kame'eleihiwa 1992:295). Out of the potential 2,500,000 acres of Crown and Government lands, 28,658 acres of land were awarded to the *maka'āinana*, less than 1% of the total acreage of Hawai'i (Kame'eleihiwa 1992:295). The small number of *kuleana* awards and their small size prevented the *maka'āinana* from maintaining their independent subsistence, often forcing them to abandon their newly acquired property (Chinen 1958:32).

Although many Hawaiians did not submit or follow through on claims for their lands, the distribution and written testimonies of LCAs provides insight into patterns of residence and agriculture. Many of these patterns probably had existed for centuries. By examining the patterns of *kuleana* LCA parcels, insight can be gained into the likely intensity and nature of Hawaiian activity in the area at the time.

3.3.3.1 Lāwa'i LCAs

In the period of the Māhele and *kuleana* claims (1848-1853), the *ahupua'a* of Lāwa'i was granted to James Young Kanehoa in a Māhele Award (M.A. 43) (Table 1). Kanehoa was born ca. 1798, the son of John Olohana Young (the seaman who had settled on Hawai'i Island under the protection of Kamehameha I and who became the first foreign advisor to King Kamehameha I) and his first wife, Nāmokuelua. When Kanehoa died in 1851 he bequeathed his land of Lāwa'i to "my married wife Hikoni," and in a second will written a week later he bequeathed to his niece, Emma (daughter of his half-sister Fanny Kekelaokalani Young), one-third of Lāwa'i and two-thirds of Lāwa'i to George Davis (Junior, son of George Hueu Davis). The court refused both wills and John Young Jr. was appointed administrator of the estate (Barrére 1994:245–247). John Young's widow Hikoni received the land, and later deeded the entire *ahupua'a* to Queen Emma.

In 1876, Queen Emma leased the land of Lāwa'i to Duncan McBryde for 15 years, though she reserved a house lot and several acres of taro patch land. McBryde developed roads and other infrastructure. In 1886, after the Queen's death, Mrs. Elizabeth McBryde bought the entire *ahupua'a* for $50,000. The upper lands were planted in sugarcane, and the valley was leased to Chinese rice growers and taro planters (Donohugh 2001:99–100).

Five *kuleana* Land Commission Awards were recorded in Lāwa'i Ahupua'a (Figure 8). None of the parcels associated with these LCAs are located within the Lāwa'i Solar project area. All five of the awarded *kuleana* claims were along Lāwa'i Stream. In the lower valley, two of the five awards (LCAs 3414 and 3417) had house lots at the shore.

3.3.3.2 Kōloa LCAs

In the early post-Contact period, the *ahupua'a* of Kōloa was controlled by the ruling chief of Kaua'i and was administered by lesser chiefs appointed by him. When Ka-umu-ali-i, last of the ruling chiefs of the island, died in 1824, his lands (Kaua'i and Ni'ihau) were given to the lineal descendants of Kamehameha. Queen Ka'ahumanu redistributed the lands among chiefs of other islands who had been loyal to the bloodline of Kamehameha. Kōloa Ahupua'a, totaling 8,620 acres, was awarded to Moses Kekūāiwa (LCA 7714-B), the brother of Alexander Liholiho (Kamehameha IV), Lot Kapuāiwa (Kamehameha V), and Victoria Kamāmalu. The awarding of the *ahupua'a* to Kekūāiwa was an outcome of an event 25 years in the past: the crushing—by forces loyal to Kamehameha II—of the 1824 revolt on Kaua'i, when Kaua'i lands were divided up

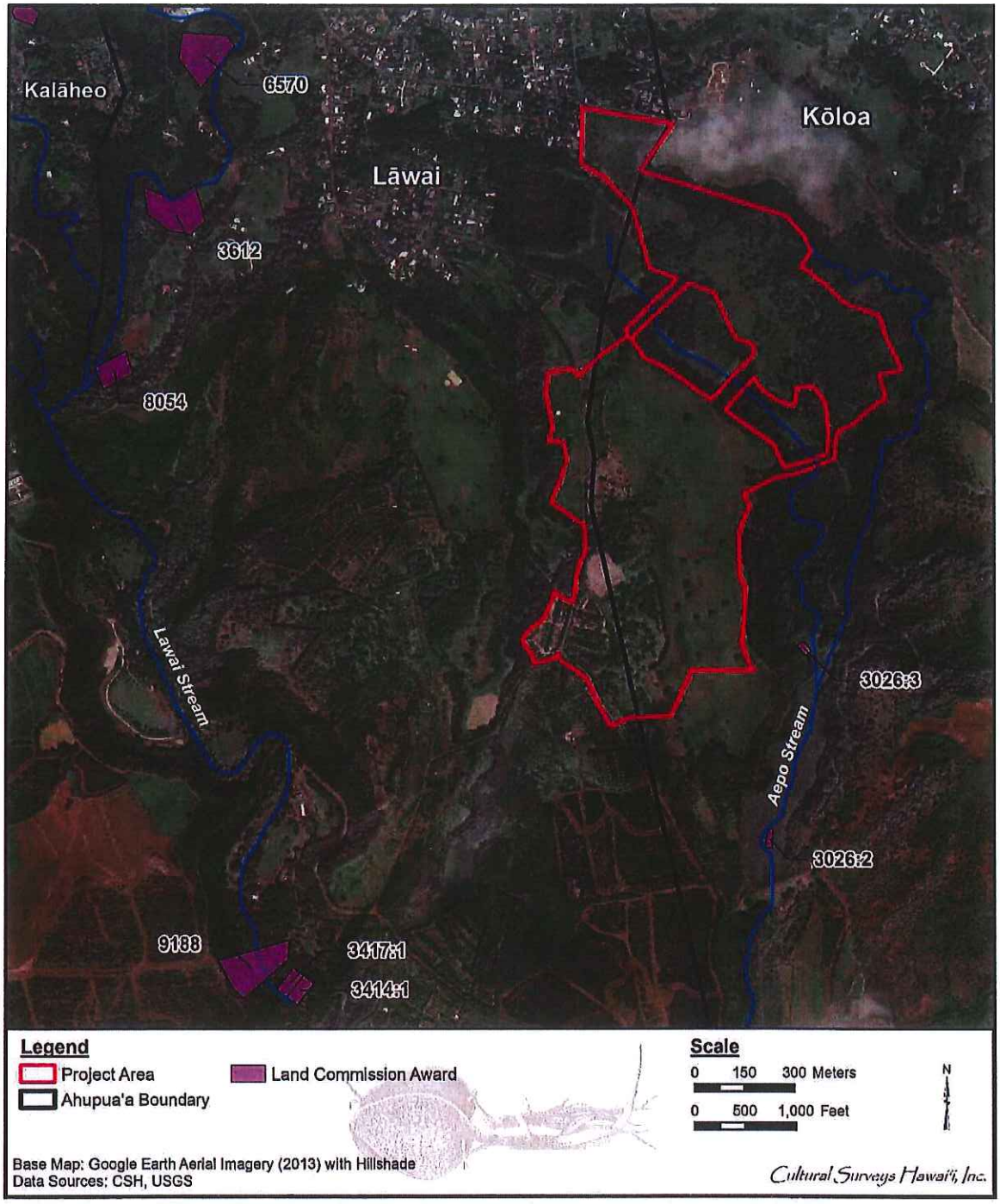

Figure 8. 2013 Google Earth aerial photograph, showing LCA parcels in the vicinity of the Lāwa'i Solar project area

Table 1. List of LCAs in the vicinity of the Lāwa'i Solar project

LCA #	Claimant	*'Ili*	*Ahupua'a*	Land Use	Description
8518-B (Royal Patent: 4512, Māhele Award: 43)	James Young Kanehoa		Lāwa'i (all)	Lāwai Kai consisted of *lo'i* (terraced pondfield) and a fishpond; a house (*kauhale*) located on the upper lands (Kanahele 1999:245–246)	Entire *ahupua'a*; divided into three areas: seashore area, valley fed by Lāwa'i Stream, and upper lands or bluffs (Kanahele 1999:245)
3414 (Royal Patent: 6143)	Levi	Pakekea	Lāwa'i	House lot, two *lo'i*	Two *'āpana* (lot); 0.75 acres; 24 rods (5 ½ yards)
3417 (Royal Patent: 3412)	Pahuiki	Papakea	Lāwa'i	House lot, three *lo'i*	Two *'āpana*; 0.90 acres
3612	Kahookahi	Kaohe	Lāwa'i	12 *lo'i* and *kula*	One *'āpana*; 4 acres, 1 rood (1/4 acre)
8054	Ehu	Haia	Lāwa'i	*Kula*, 12 *lo'i*	One *'āpana*; 1 acre; 3 rods
9188 (Land Patent 8111)	Kamakahookai	Papkea	Lāwa'i	House lot, *kula* (pig enclosure), and six *lo'i*	One *'āpana*; 21.5 acres, 17 rods; two *'āpana*; 1 rood, 33 rods
387 (Royal Patents: 1936, 1938, 1942, 1958, 1600)	American Board of Missions (ABCFM)	Kamalaula	Kōloa		14 *'āpana*; 825.35 acres
7714-B (Royal Patent: 6714)	Moses Kekuaiwa		Kōloa		Approx. 8,620 acres awarded to Kekuaiwa
3026	Elemakule II	Pua	Kōloa	House lot, four *lo'i*	Two *'āpana*; 1 rood; 39 rods
6570	Awahua	Peapeakuakua	Kalāheo	*Kula*, 20 *lo'i*, house lot	One *'āpana*; 4 acres; 1 rood; 20 rods

among the chiefs of the other islands. The next largest award in the *ahupua'a* went to the Protestant Mission (ABCFM) (LCA 387) and consisted of approximately 825 acres. The majority of the mission lands were located in the vicinity of Kōloa Town, where the parsonage was located. Large parcels just *mauka* of Kōloa Town were utilized for sugarcane cultivation and cattle pasture.

Eighty-nine *kuleana* awards were given to individuals within Kōloa Ahupua'a. The majority of these LCAs were located in and around Kōloa Town itself. This concentration of awards around the town area may reflect both the traditional land settlement pattern, a focus on the resources of Maulili Pool and Waikomo Stream (a permanent stream), and a more recent movement of the populace to the plantation and missionary centers.

Testimonies provided to the Land Commission by applicants of LCAs 3584, 6309, and 6667 were generally limited to stating the boundaries of their claimed lands as well as land use. All three LCAs are indicated as being enclosed by stone walls and note the presence of additional house lots and *lo'i* of other claimants in the vicinity. Of particular interest are the stated boundaries of LCA 6309, which indicated the presence of pasture lands immediately *puna* (east) of the LCA. This may explain the presence of numerous stone walls described in the land claims. These walls are likely cattle barriers used to keep cattle out of house lots and agricultural plots.

A review of LCA records indicates land usage and activity by the mid-nineteenth century included habitation, cattle ranching, and agriculture, including the cultivation of taro, sugar, potatoes, and yams. This may reflect the continuation of traditional Hawaiian land use.

No parcels associated with LCAs are located within the Lāwa'i Solar project area. The locations of the LCA 3026 parcels near the Lāwa'i Solar project area are shown on a 2013 Google Earth aerial photograph (see Figure 8). Table 1 presents information on the LCA awards of Lāwa'i and Kōloa Ahupua'a, sourced from LCA documents.

3.3.4 Historic Documents

3.3.4.1 Lāwa'i

Figure 9 and Figure 10 show the landscape features within in the Lāwa'i Solar project area during the 1890s. Within Lāwa'i Ahupua'a, outside the project area, the only identified feature is Queen Emma's residence, "Maunakilohana," and the road running from Lāwa'i Kai to Kōloa (see Figure 10).

3.3.4.1.1 Queen Emma

The *ahupua 'a* of Lāwa'i was granted to James Young Kanehoa at the mid-nineteenth century Māhele. Following Kanehoa's death in 1851, the *ahupua'a* was inherited by his widow, Hikoni. Kanehoa was the uncle of Queen Emma, wife of Alexander Liholiho, King Kamehameha IV. In 1856, the king and queen arrived in Kōloa and stayed for three days during a royal tour of the Hawaiian Kingdom. The royal party visited Spouting Horn on the eastern shore of Lāwa'i Ahupua'a.

There is no record of any further visits to Kōloa by the king or queen during Liholiho's reign. However, in 1870, following Liholiho's death in 1863, the Dowager Queen Emma had a residence built for herself in Lāwa'i Ahupua'a, on a bluff east of Lāwa'i Kai. The queen and her party arrived at Kōloa landing on 21 December 1870, intending to reside at her Lāwa'i house until the spring of

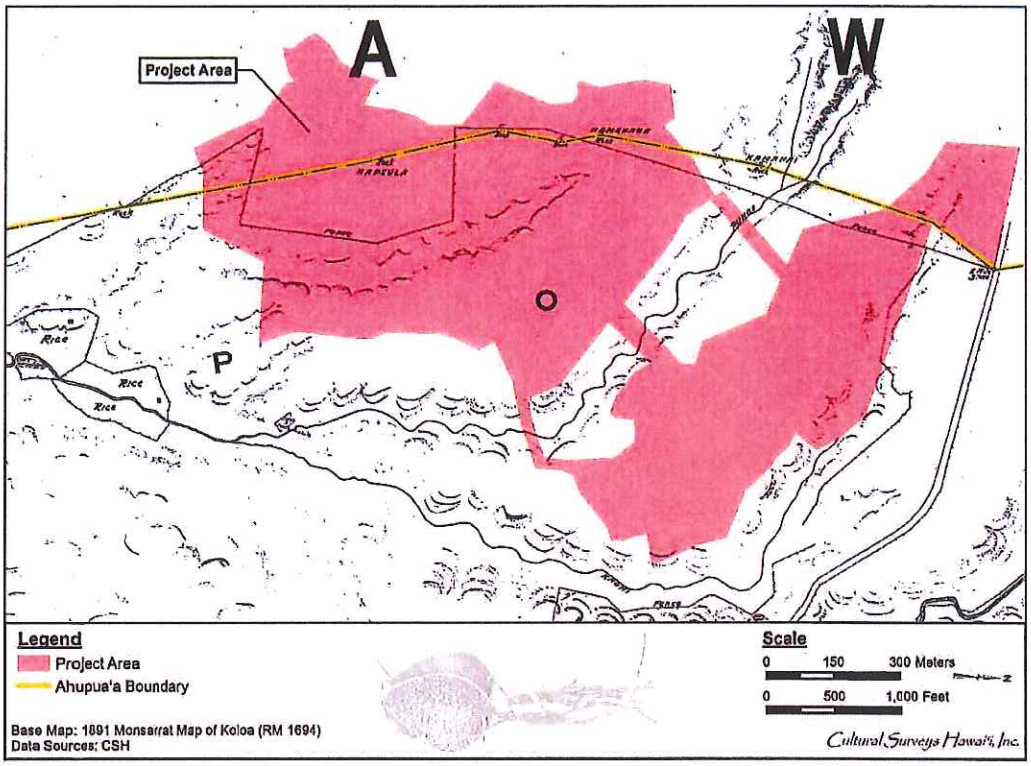

Figure 9. Monsarrat map (1891) showing the project area

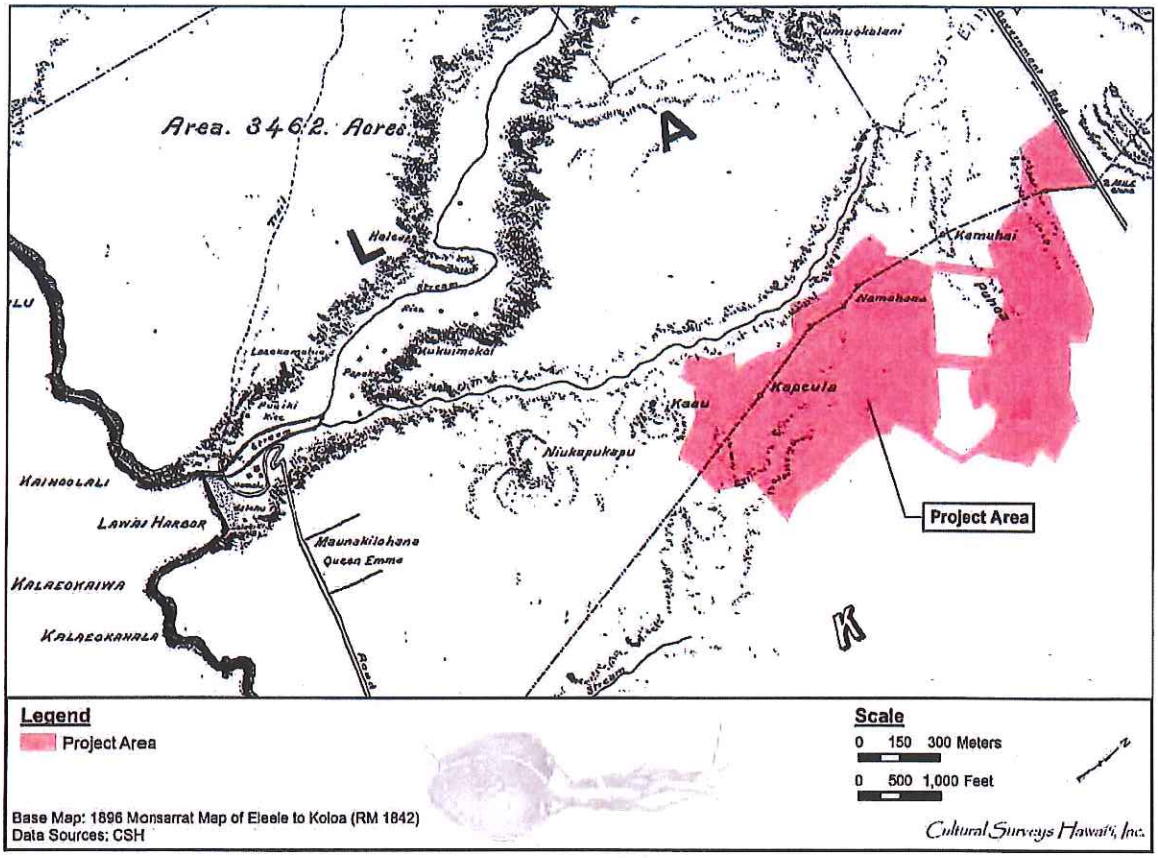

Figure 10. Portion of 1896 Monsarrat map, showing Queen Emma's house lot southwest of the Lāwa'i Solar project area

1871. The queen described her arrival at Kōloa and the journey to her residence in a letter of 31 December to King Kamehameha V:

> We arrived late in the afternoon last Thursday & had to ride over two miles before we reached this place. The schooner left that same evening & even if I had the time, there is nothing to tell you about but your Majesty will I am sure understand how much I am gratefull [*sic*] for your kindness in sending me free of expense down here.
>
> The house we are in is one by itself for a couple of miles around, rather lonesome I fear for some. [Forbes 1970:4]

David Forbes describes the Lāwa'i lands (i.e., the lands to the south of the Lāwa'i Solar project area) surrounding the queen's residence:

> . . . lonesome indeed it must have appeared to many of her party. The house that they were getting settled in stood on the bluff above Lawai-Kai. A large square frame house with a thatch roof, and with several outbuildings enclosed by a stone wall, with only a few struggling trees for shade, the house must have indeed seemed desolate to those accustomed to Honolulu. The surrounding area was an arid, stony pasture, suitable only for grazing. [Forbes 1970:4]

An historic photograph of Queen Emma's house (land south of the Lāwa'i Solar project area) confirms that in the late nineteenth century and before the introduction of sugarcane the area was indeed an arid, stony pasture (Figure 11).

3.3.4.1.2 Prince Jonah Kūhiō Kalaniana'ole

On Lāwa'i Beach Road, the Prince Kūhiō Memorial Park marks the birthplace on 26 March 1871 of Jonah Kūhiō Kalaniana'ole, great grandson of Kaumuali'i, the last high chief of Kaua'i, and son of a sister of Queen Kapi'olani. Prince Kūhiō's career of public service included ten terms as Hawai'i's delegate to the U.S. Congress—where he helped create the Hawaiian Home Lands Act—from 1903 until his death in 1922. In 1902, the prince founded the Royal Order of Kamehameha I. Prince Kūhiō Memorial Park is owned and maintained by members of the Royal Order of Kamehameha I, Kaumuali'i Chapter No. 3. The prince's birthplace and memorial park, above Ho'ai Bay, are at "Kaho'ai, a prominent Hawaiian fishing village in pre-contact times, and chiefs of Kaua'i would often stay there" (Donohugh 2001:261).

3.3.4.2 Kōloa

Judge Henry Kawahinehelelani Blake of Kōloa (1874-1948) drew a colored map of "Koloa Village"—most likely in the 1938—depicting what the area looked like in 1888 when he was a boy of 14 (Figure 12). The map depicts the land east of the Lāwa'i Solar project area and shows the Kōloa Village filled with *lo'i* and houses, including the "Governor's House, Mauna Kapu." The *lo'i* appear to be fed primarily by an *'auwai* (ditch) extending west from Waikomo Stream. Only one pond field east of the road to Kōloa Landing is identified as growing "rice and taro." Based on the map's legend, all the other ponds on the map are "taro lands"—indicating that taro continued to be grown in the vicinity of the Lāwa'i Solar project area in the last quarter of the nineteenth century.

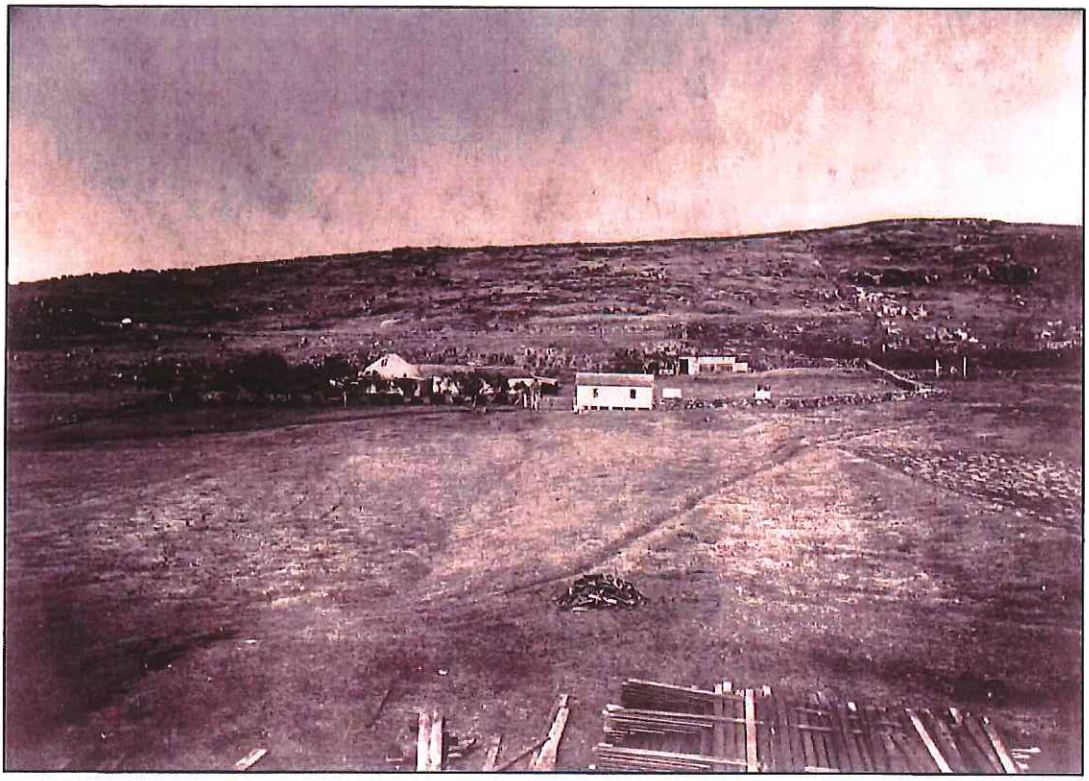

Figure 11. Photo of Queen Emma's Home at Lāwa'i, ca. late nineteenth century (Bishop Museum Archives)

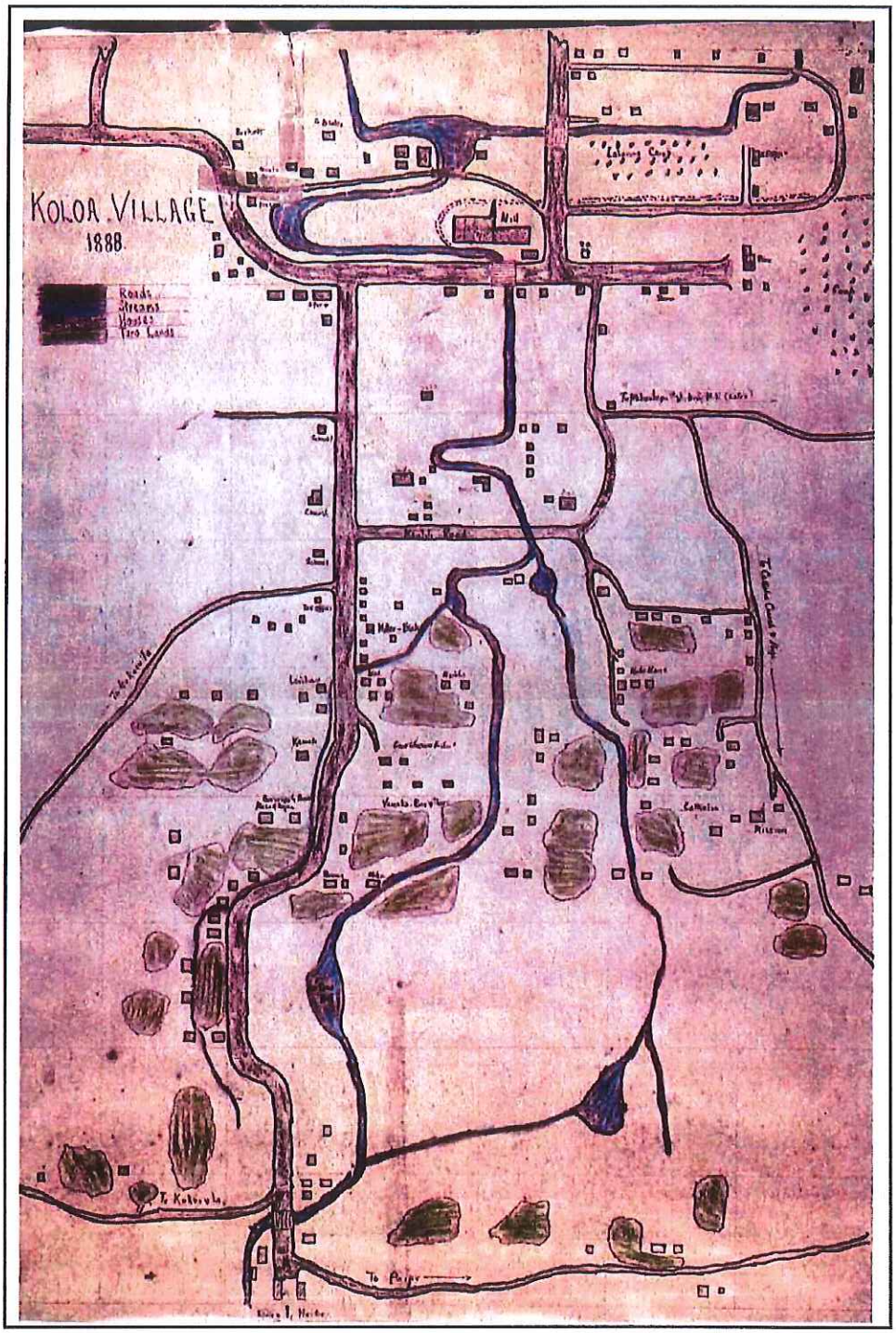

Figure 12. Hand-drawn map of Kōloa Village, 1888, by Judge Henry K. Blake (1874-1948) (courtesy of the Kaua'i Historical Society). Kōloa Village is 2 km. east of the Project Area

A second map drawn by Judge Henry Kawahinehelelani Blake of Kōloa (1874-1948) shows "Koloa Village" in 1938 (Figure 13). The map was likely drawn in 1938 along with the map of the village in 1888 (see Figure 12) to record a "then and now" portrait of Kōloa. Judge Blake's map reveals that there are no longer any *lo'i*, *'auwai*, or houses in Kōloa Village. They have all been supplanted by "cane lands" and "pasture lands." In addition, "pineapple lands" are shown *mauka* of the cane lands. Commercial pineapple growing was also pursued by Kauai Pineapple Company within a *mauka* portion of Kōloa Village.

3.3.5 Sugar Industry

The story of nineteenth century development in the Kōloa District is the story of three large sugar companies: the Koloa Sugar Company, the first plantation sugar company on Kaua'i, which eventually owned lands in eastern Kōloa, Weliweli, Pā'a, and Māhā'ulepū Ahupua'a; the McBryde Sugar Company, which stretched from 'Ele'ele Ahupua'a through Wahiawa, Kalāheo, Lāwa'i, and western Kōloa Ahupua'a; and, to a lesser extent, Grove Farm, which had upland lands from Kōloa to Līhu'e. Grove Farm is mentioned in this report because of its contribution to the historic and modern eras of Kōloa.

3.3.5.1 Koloa Sugar Company

Koloa Sugar Company was the first plantation-organized industry in Hawai'i (Damon 1931:176, 198). It began in 1835 as Ladd and Company. About 1,000 acres of land for silk and sugar culture were leased from the king and local chiefs, mainly in Weliweli Ahupua'a, for 50-years at $300 a year. The lease "allowed the use of the waterfall and an adjoining mill site at Maulili pool, not far from the thousand acres, together with the right to build roads, the privilege of unrestricted buying and selling, and freedom from local harbor dues." In subsequent years, they would buy or rent land in upland Pā'ā (1841), in Māhā'ulepū (1878), and in Kōloa Ahupua'a, the section east of Kōloa Stream (1881) (Alexander 1937: frontpiece).

Judd (1935:57) noted the following:

> The company was permitted to hire natives to work on the plantation provided they paid Kauikeaouli, the king, and Kaikioewa, the governor of Kauai, a tax for each man employed and paid the men satisfactory wages. The workers were to be exempt from all taxation except the tax paid by their employers. [Judd 1935:57]

The commercial activity initiated by the Ladd and Company plantation had widespread ramifications. Kōloa Town and the landing at the mouth of Waikomo Stream became major commercial centers. The landing—or "roadstead" as it was called—was a busy port during the mid-1800s. "An estimate in 1857 stated that 10,000 barrels of sweet potatoes were grown each year at Koloa, and that the crop furnished nearly all the potatoes sent to California from Hawai'i. Sugar and molasses were also chief articles of export" (Judd 1935:326). Whalers also used the Kōloa roadstead during this period (1830-1870) and took on provisions of squashes, salt, salt

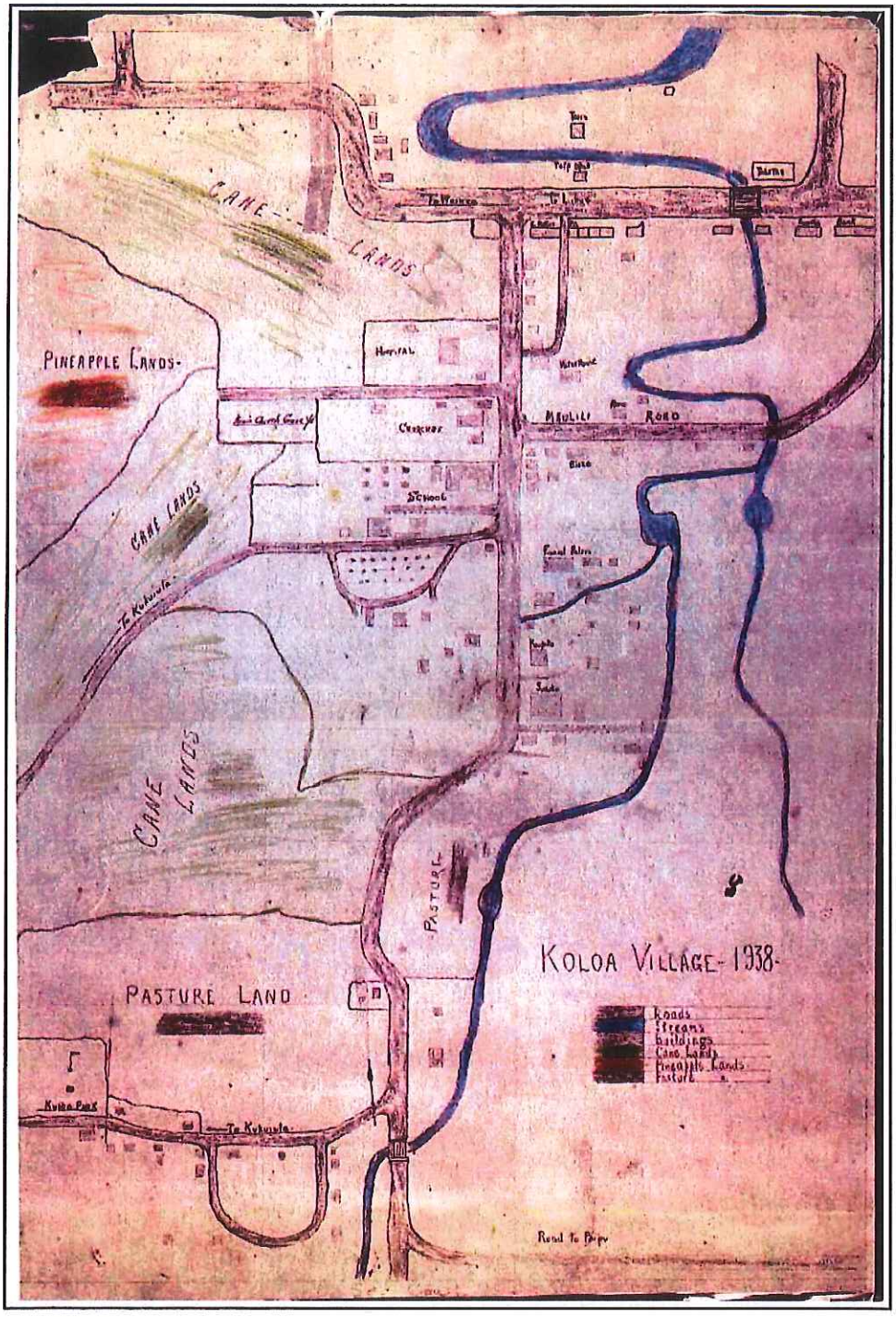

Figure 13. Hand-drawn map of Kōloa Village, 1938, by Judge Henry K. Blake (1874-1948) (courtesy of the Kaua'i Historical Society)

beef, pigs and cattle (Figure 14). Hawaiians grew the squashes (pumpkins) on the rocky lands north of the landing, and numerous salt pans were located along the shore near the landing.

Ladd and Company ceased operating in 1845. Then, following a succession of individual and partnered ownerships, a new enterprise, Koloa Sugar Company, was established in 1880. In 1882, the Koloa Sugar Company announced it had ordered all the components for a plantation railroad. According to the *Planter's Monthly*, 1882 Vol. 1, "It (the railroad) will consist of four miles of 30 inch gauge track, forty cars 5 x 10 feet, and one locomotive . . . " (Condé 1993:28). According to Arthur C. Alexander (1937), "Cut cane was hauled to the mill by oxcart until 1882. In that year, 3½ miles of 30-inch gauge, 18 pound railroad track and 50 cars were purchased" (Condé 1993:28).

By 1885, the railway extended to Kōloa Landing where steamers transported the bags of sugar to the mainland. A motorized derrick winched the bagged sugar from the railroad cars to the warehouse on the west side of the landing. From there, bagged sugar was loaded onto small lighters, which would row the sugar out to waiting ships in the harbor. By 1895, the railroad had extended a spur line through the coastal lands of Kōloa into Weliweli to aid in the harvest around Pā'ā. Remnants of this spur line are seen today throughout lower Po'ipū (Donohugh 2001:106).

The Koloa Sugar Company had previously purchased the *ahupua'a* of Pā'ā southeast of Kōloa town, and a large parcel, a swamp that the company drained and tried to use for sugar, was unproductive. A new and much larger mill was built there in 1912 about a mile from Kōloa (Figure 15). New railroad track was laid, and an asphalt road was built to connect the new mill with Kōloa Landing. World War I caused a huge demand for sugar. By the end of hostilities in 1918, the Koloa Sugar Company was producing 9,000 tons of sugar each year and adding additional acreage (Donohugh 2001:105).

Kōloa Landing was phased out around 1925 when McBryde Sugar Company and the Koloa Sugar Company began shipping their product out of Port Allen Harbor at Hanapēpē in Waimea District. The McBryde Plantation had been improving the facilities at 'Ele'ele Landing since the turn of the century, and a private company, the Kauai Terminal Limited Railway, had developed a modern bridge crossing the Hanapēpē River. Soon after this, the Koloa Sugar Company ceased to use the *makai* Kōloa fields, and much of the area was converted into cattle-grazing pasture by the Knudsen family. Most of the *mauka* areas of Kōloa remained under sugarcane cultivation as late as the 1970s, when these cane lands were converted into pasture (Donohugh 2001:101).

According to Wilcox's (1996) account of the Koloa Sugar Company, following the merger of the plantation lands of the Koloa Sugar Company and the Grove Farm Company in 1948, the combined lands under cultivation required new sources of irrigation water. In 1965, Grove Farm built a tunnel to bring water from Ku'ia directly into the Waitā (Kōloa) Reservoir. Grove Farm leased these cane lands to McBryde Sugar Company when it terminated sugar operations in 1974 (Wilcox 1996). The mill in Pā'ā was finally closed in 1996, and remains a landmark.

3.3.5.2 McBryde Sugar Company, Ltd.

Duncan McBryde moved to Wahiawa from his estate in Wailua ca. 1860 (Damon 1931). He acquired a lease for lands at Wahiawa from Victoria Kamāmalu, sister of Moses Kekuaiwa. Kamāmalu inherited the unclaimed lands at Wahiawa following the untimely death of Kekuaiwa in 1848. McBryde drove his herd of cattle across the island and began the development of the extensive Wahiawa Ranch. The McBryde family estate, known as Brydeswood, was built in the

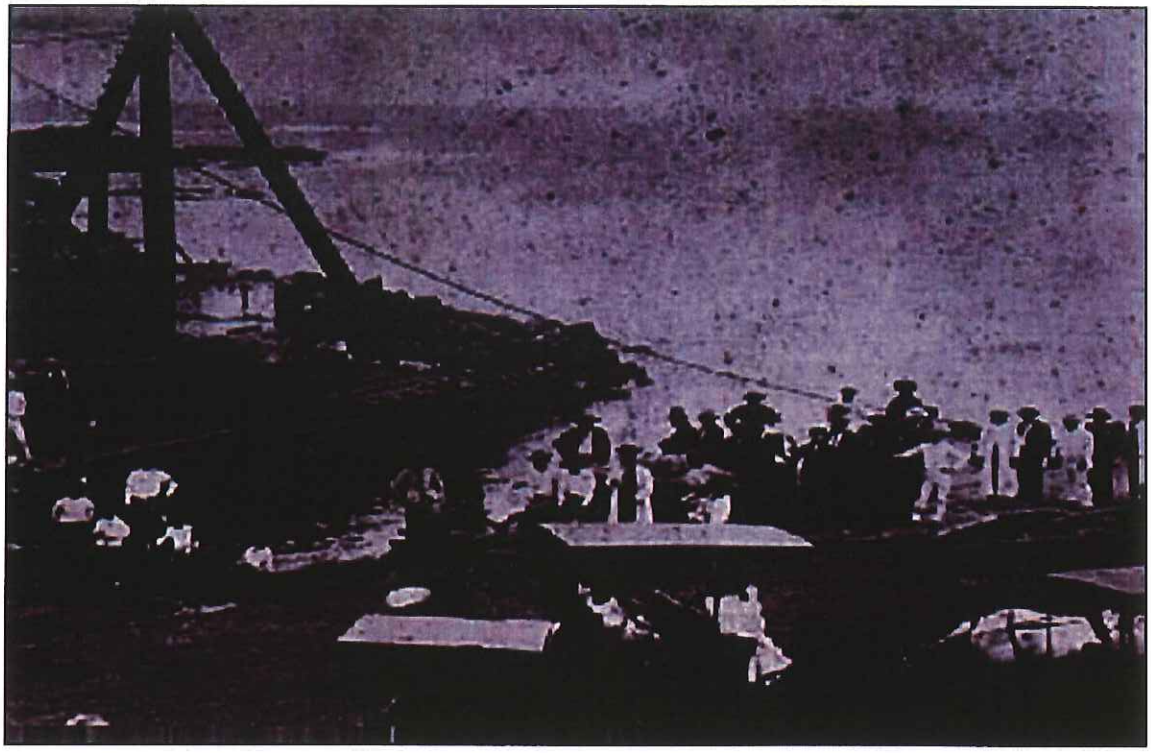

Figure 14. Photograph of Kōloa Landing, ca. 1880 (Hawaiian Stamps 2015)

Figure 15. Photograph of Kōloa Mill, built in 1912 (Kōloa Plantation Days 2015)

uplands of Wahiawa, *mauka* of the government road. McBryde acquired land in Wahiawa, later owned in fee simple, and leased land in Kalāheo from the Crown. Eventually, the plantation covered most of the land of western Kōloa District, including Wahiawa, Kalāheo, Lāwa'i, and the western section of Kōloa Ahupua'a, west of Kōloa Stream (Figure 16).

By 1870, in addition to ranching, McBryde ventured into sugarcane cultivation. The plantation primarily consisted of land already owned by the McBryde Estate, including the Wahiawa Ranch and lands in neighboring Kālaheo and Lāwa'i. In 1899, Walter D. McBryde, son of Duncan McBryde, and W.A. Kinney founded the McBryde Sugar Company, formed by combining the lands of the Eleele Plantation in Hanapēpē Ahupua'a, the lands owned by McBryde in Wahiawa, Kalāheo, and Lāwa'i, and the lands owned by the Koloa Agricultural Company (separate entity from the Koloa Sugar Company), which had lands in Kōloa Ahupua'a owned by the Knudsen family, west of Kōloa Stream (McBryde Sugar Company 1949:3).

To irrigate the mid-sized plantation (approximately 4,700 planted acres), between 1900 and 1907 the McBryde Sugar Company constructed 30 large and small reservoirs, as well as an extensive system of ditches to collect water from the uplands (Yamanaka and Fuji 2001). In addition to collecting surface water, which became insufficient for the growing plantation, McBryde Sugar Company constructed a series of wells and pumps to collect groundwater (Wilcox 1996). These plantation ditches, pumps, and reservoirs are indicated on a 1900 map of the McBryde Sugar Company lands (see Figure 16).

Plantation development consisted of extensive sugarcane cultivation, with associated irrigation ditches, on the upper plateau areas outside Wahiawa Valley. It is also noted that in addition to the Eleele Ditch, several other ditches were constructed in order to take water from Wahiawa Stream to the McBryde Sugar Company cane lands. A railroad line was also constructed *mauka*, running from the McBryde Plantation Mill in the east, through Wahiawa Valley, and on to 'Ele'ele Landing in the west. Plantation camps were extensively developed to house the large numbers of plantation laborers. The structures were concentrated in the vicinity of the rail line crossing, located both within Wahiawa Valley, as well as along the upper edge of the valley. Additional plantation camp structures were located in the *makai* portion of Wahiawa Valley (Yamanaka and Fuji 2001).

Following the expansion of sugar cultivation by McBryde Sugar Company, a "New Mill" (Numila) was constructed in Wahiawa by 1905 to replace the mill at 'Ele'ele (Figure 17 and Figure 18). Additional plantation development included the construction of a reservoir, the Kapa Reservoir. A cemetery was also located near the coast, between Wahiawa Bay and 'Ele'ele Harbor. The cemetery was likely established for the interment of McBryde Sugar Company plantation workers (Yamanaka and Fuji 2001).

In 1899, the three plantations—Koloa Sugar Company, Grove Farm, and McBryde Sugar Company—merged under the McBryde name. In 1933, McBryde took over 7,200 acres of the Grove Farm Plantation (Dorrance and Morgan 2000:30). In 1985, the McBryde Sugar Company ranked as Hawai'i's eighth largest sugar plantation. However, sugar plantations soon became unprofitable in the Islands, bringing an end to McBryde's sugar production in 1996. Much of the former McBryde sugar lands were converted into coffee production, with the Kaua'i Coffee Company replacing the McBryde Sugar Company. Much of the former Wahiawa and 'Ele'ele cane lands are presently planted in coffee (Yamanaka and Fuji 2001).

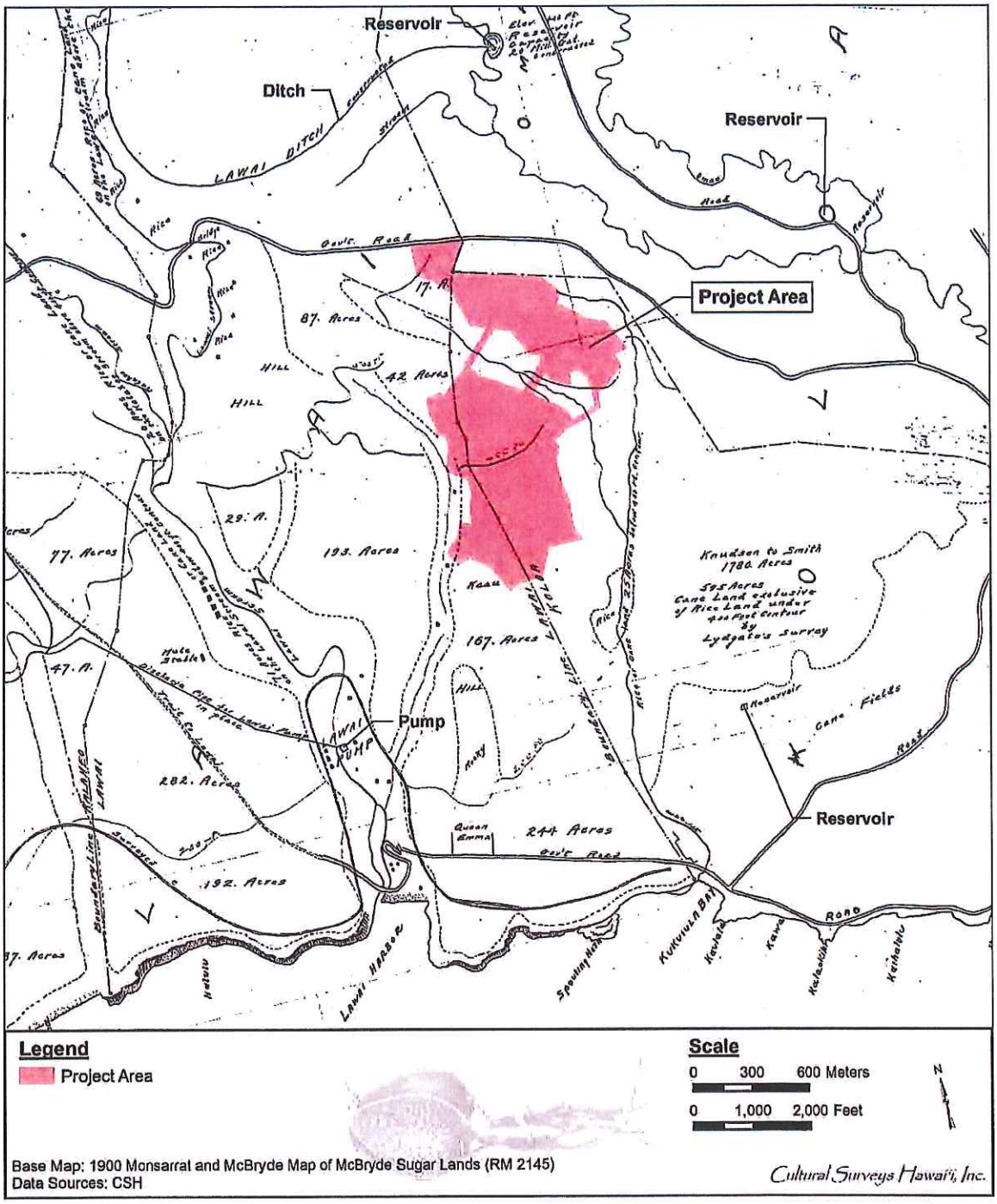

Figure 16. Combined portions of 1900 Hawaii Territory Survey Map of Kōloa, M.D. Monsarrat and McBryde Sugar Company Lands map, showing the Lāwa'i Solar project area

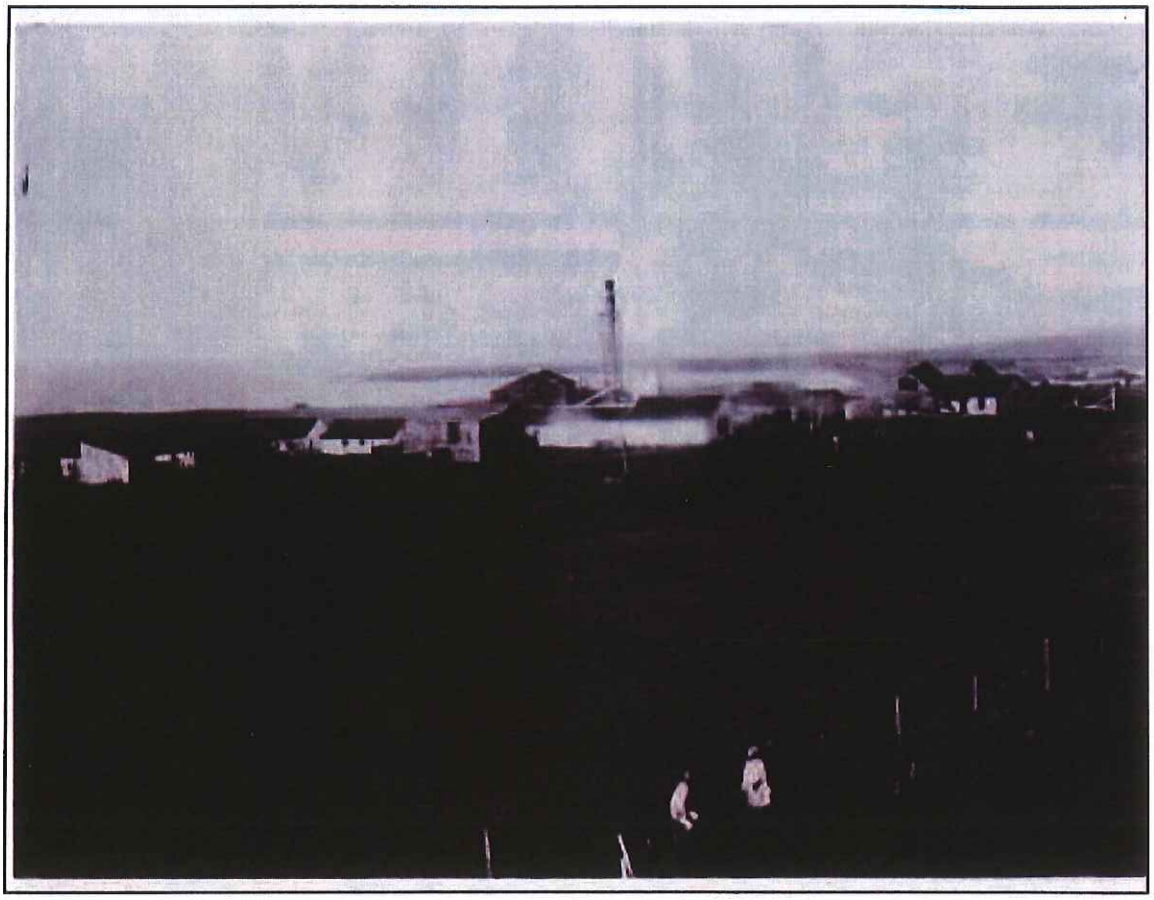

Figure 17. Photograph of Sugar Mill in 'Ele'ele, ca. 1885 (Hawaiian Stamps 2015)

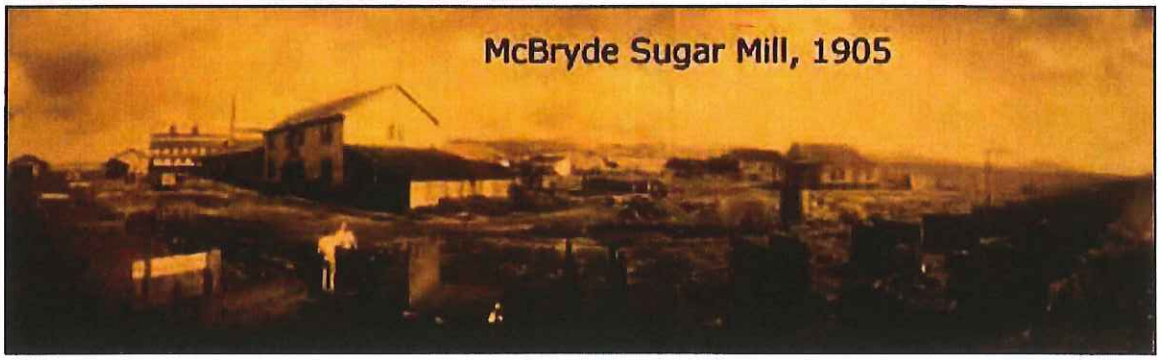

Figure 18. Sepia photograph of McBryde Sugar Mill, 1905 (Hawaiian Stamps 2015)

3.3.5.3 Grove Farm

Grove Farm was started by Warren Goodale in 1850, sold the same year to James F.B. Marshall for $3,000, and sold again in 1856 to Mr. Widemann for $8,000 (Krauss and Alexander 1984:152). At the end of 1863, Judge Widemann asked George Wilcox to undertake the supervision of the cutting of a water lead or irrigation ditch for the Grove Farm Plantation using Hawaiian labor (Krauss and Alexander 1984:107–109). The ditch ("1st Ditch") was completed in July 1863, but failed to bring water to the fields (Krauss and Alexander 1984:110–111). Wilcox leased Grove Farm Plantation from H.A. Widemann at the end of 1864 and rapidly developed the irrigation infrastructure further (Krauss and Alexander 1984:114–116). Western commerce between Kōloa and Līhu'e took off during the second half of the nineteenth century. A visitor to Kaua'i in 1865, William T. Brigham, described the route between Līhu'e and Kōloa:

> From Līhu'e the road led over the plain with the mountains on the left. A ditch crossed and recrossed the road as it wound along the hills from the mountains to the canefields below. Owls were very abundant. The Pass over the mountains was very good and not at all steep, and all the way which was some twelve miles, the road was very good, in fact a carriage road. Two hours riding brought me to Dr. Smith's [in Kōloa] at eight. [Lydgate 1991:143]

The "ditch" Brigham described probably included "1st Ditch," which was excavated in 1864 and "2 ml Ditch," which was completed in 1865. "3rd Ditch," which traverses the Kokolau Tunnels area was developed in 1866-1867. The Kokolau Tunnel was excavated under portions of the 3rd Ditch. The ditches were excavated by Hawaiian labor at 25 cents per man per day, but Chinese labor was used to excavate short tunnel sections. Almost all of the ditch construction was by shovel with one man capable of digging 5 linear ft in one day. Black powder blasting was used on occasional hard rock outcrops (Krauss and Alexander 1984:123–131). 3rd Ditch is annotated on a map of Grove Farm as starting at the "Halenanaho" (properly "Halenanahu") Reservoir, *mauka* of the highway, then heading south, crossing the highway alignment and then running roughly parallel with the Hule'ia River toward the core Grove Farm fields.

In 1870, Wilcox bought Grove Farm from Widemann for $12,000, three-quarters of which was borrowed. Four years later he had 200 acres under cultivation. The cane was milled at the Lihue Mill and exported from Nāwiliwili. In 1874, Wilcox renewed a lease for 25 years for a 10,000-acre tract of Ha'ikū Ahupua'a from Princess Ruth Ke'elikōlani (Krauss and Alexander 1984:179). On 1 April 1881, George Wilcox bought 10,500 acres of Ha'ikū Ahupua'a from Princess Ruth, increasing the acreage of Grove Farm nearly ten-fold (Krauss and Alexander 1984:206). The sale was part of a package deal in which Willie Rice also received Kīpū and Kīpū Kai for a total price of $27,500—money that Princess Ruth used to build her palace which rivaled Kalākaua's palace that was completed the following year.

In 1933, McBryde took over 7,200 acres of the Grove Farm Plantation (Dorrance and Morgan 2000:30). In 1948, Grove Farm purchased Koloa Plantation. This doubled the size of Grove Farm, gave Grove Farm its own sugar mill for the first time, and eliminated duplication in manpower, equipment, and administrative costs. In 1948/1949 a cane haul truck tunnel (the Wilcox Tunnel) was excavated under the Hoary Head Range connecting the sugarcane fields of Ha'ikū to the Kōloa Mill (Krauss and Alexander 1984:366–368).

In the mid-1960s, Sam Wilcox of Grove Farm donated 200 acres of former sugar land to the State for Kaua'i Community College (Kamins and Potter 1998:275). Grove Farm ended its sugar business in 1974, setting aside lands for development and also for the continuation of sugar cultivation by leasing its Līhu'e lands to Lihue Plantation and its Kōloa lands to McBryde Sugar Company (Wilcox 1996:76).

3.3.6 The 1900s

The 1923 McBryde Sugar Company field map (Figure 19) shows the pervasive presence of sugarcane in the vicinity of the Lāwa'i Solar project area within the first decades of the twentieth century. Further evidence is provided in aerial photographs taken in 1924 of views *mauka* from Lāwa'i Bay and Kukui'ula Harbor (Figure 20 and Figure 21). The project area is located further inland of where the historic photos were taken.

A 1910 USGS map (Figure 22) indicates the low density of urbanization in the Kōloa District. The district had few improved roads, and areas worthy of labels included only the mills for the McBryde Plantation in Wahiawa and associated upland camps, Kōloa Landing, and inland Kōloa Town. As shown on a 1963 USGS map (Figure 23) and a 1978 aerial photograph (Figure 24), in the mid- to late twentieth century, there are numerous highways, reservoirs, and town centers in Numila (former McBryde mill area) in Wahiawa, an expanding Kōloa Town, a cluster around Kōloa Mill in Pā'ā, and numerous small beach villages.

3.3.6.1 Modern Land Use

By the late 1960s, the main town of Kōloa experienced a type of reverse migration back to the shoreline. Although the town had established a Civic Center in 1977, the pace of tourist-driven development at the shoreline had been drawing construction and service jobs away from the town center. In 1962, the Wai'ohai Resort opened, with the Sheraton Kaua'i Resort following in 1965. The Kīahuna Plantation Resort opened in 1967, followed by the construction of various condominiums throughout the 1970s and 1980s. Finally, the Hyatt Regency Resort, with its expansive golf course, opened in 1991.

By the early 1990s, the tourist industry had successfully attached the name "Po'ipū Beach" to the entire coastline beginning at Kōloa Landing and continuing east to Makahū'ena Ledge (Donohugh 2001). With the development of the Po'ipū Bay Resort Golf Course and the Hyatt Regency Kaua'i Resort Hotel, the Po'ipū Beach name became synonymous with all 2 miles of coastline fronting the Wai'ohai, Kīahuna, and Sheraton developments, ending at Po'ipū Beach Park (Donohugh 2001:244).

Future plans within the Kōloa District will place more demands on beachfront properties along the coastline. Over 1,000 acres of former sugar plantation lands are slated for hotel and condominium development surrounding both Lāwa'i and Po'ipū coastal resort areas (Donohugh 2001). Future development plans for the upland areas involve both large tracts of lands, as well as regional redevelopment within Kōloa Town itself.

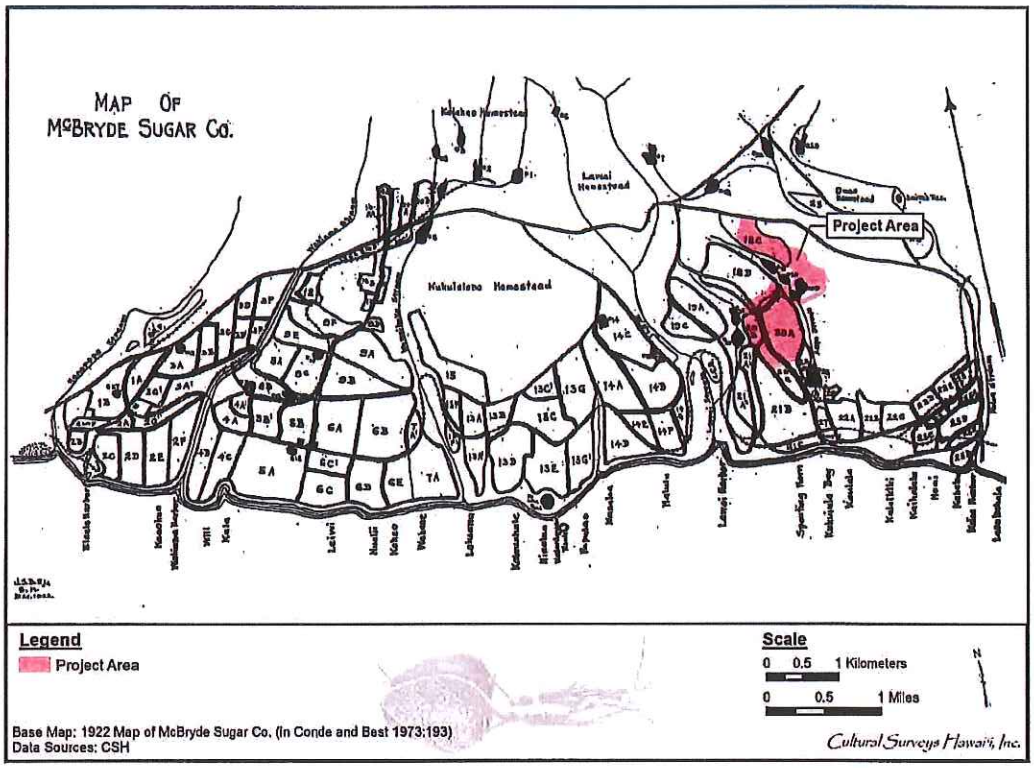

Figure 19. 1922 McBryde Sugar Company field map (Condé and Best 1973:193). Each number on the map indicates a sugarcane field.

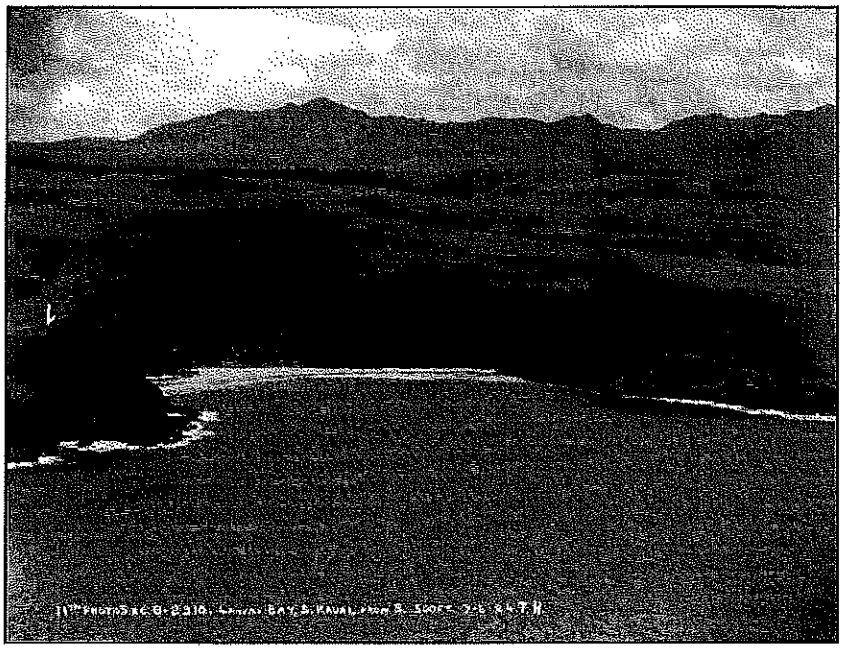

Figure 20. Aerial photograph of Lāwa'i Bay (ca. 1924) (Bishop Museum Archives)

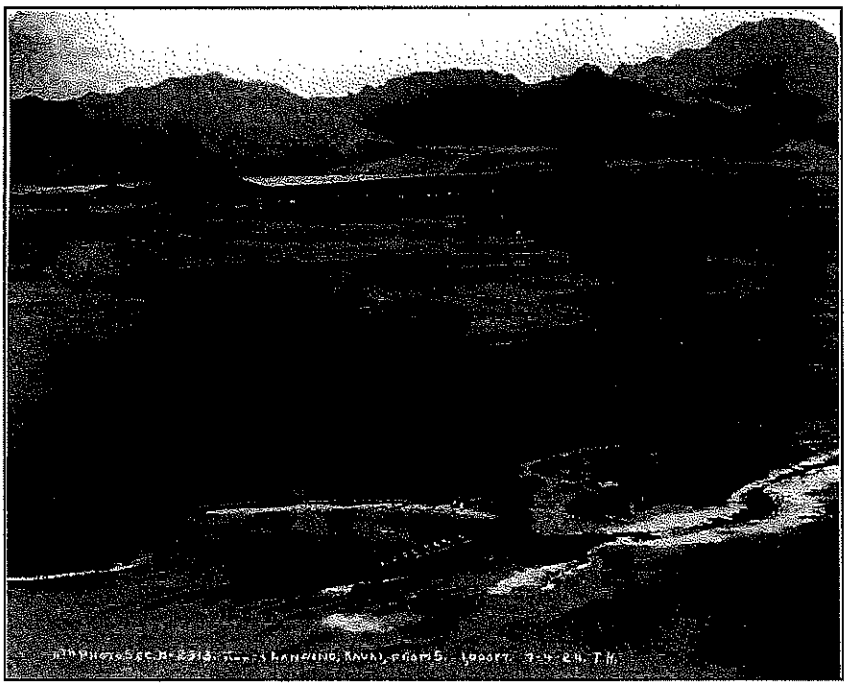

Figure 21. Aerial photograph of Kukui'ula Harbor (ca. 1924) (Hawai'i State Archives)

Figure 22. Portion of 1910 Hanapepe and Lihue USGS topographic quadrangles, showing limited development in the vicinity of the Lāwa'i Solar project area

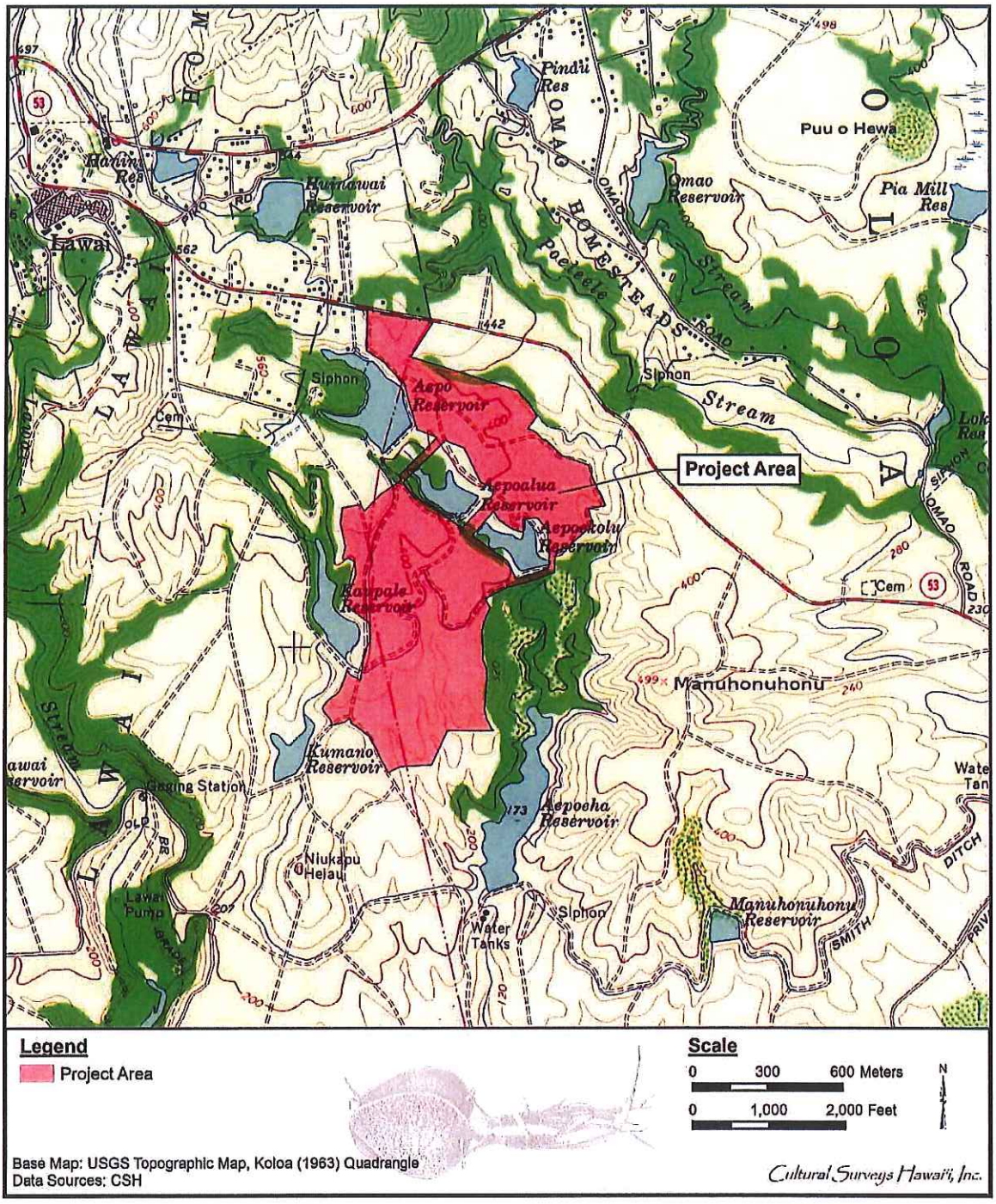

Figure 23. Portion of 1963 Koloa USGS topographic quadrangle, showing increasing development in the vicinity of the Lāwa'i Solar project area

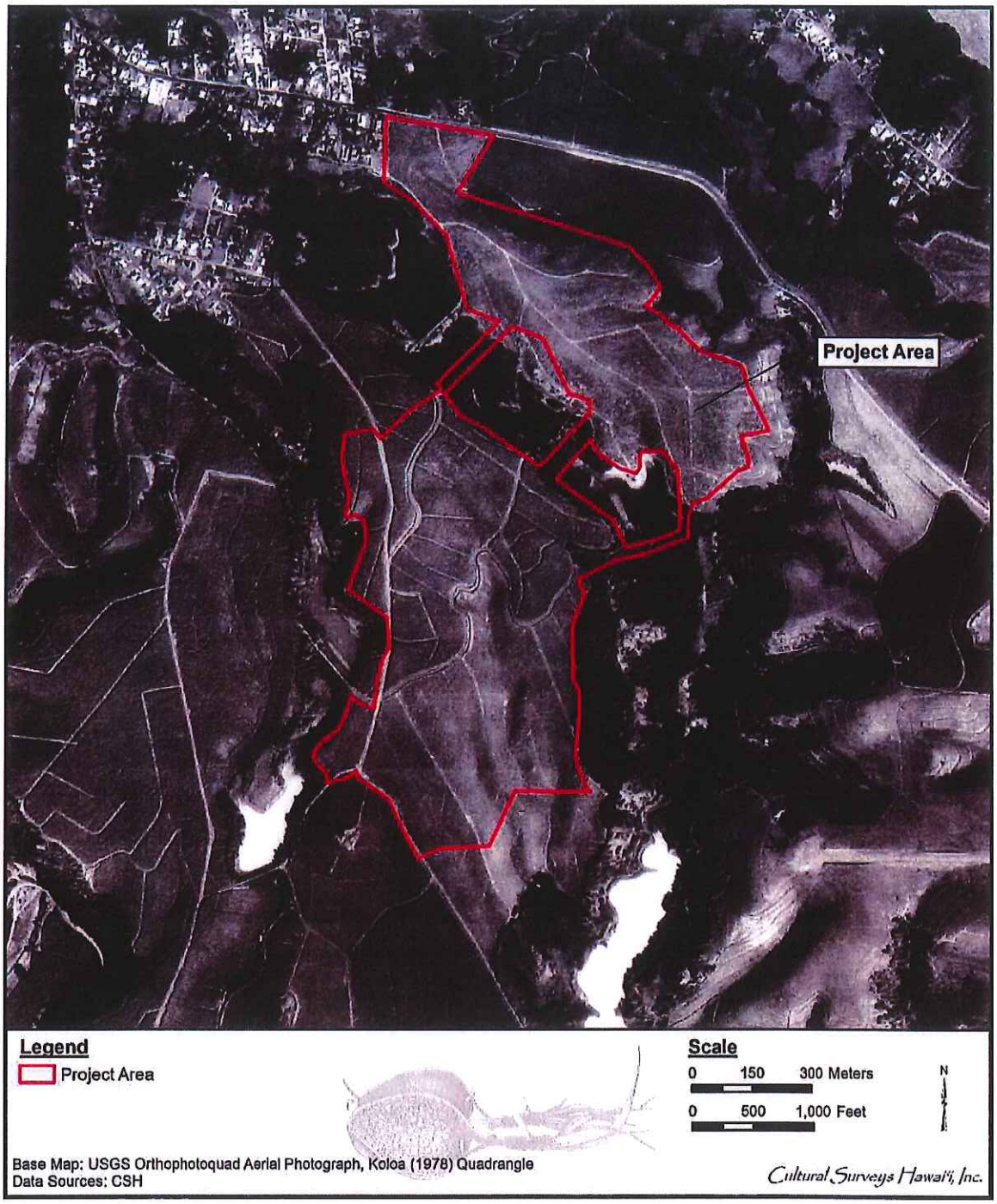

Figure 24. 1978 Koloa USGS Orthophotoquad aerial photograph

3.3.6.2 Conservation and Agricultural Lands

Mauka portions of Kōloa Ahupua'a are zoned as conservation and agricultural lands. Lands currently zoned for conservation are those owned by A&B–Hawaii Inc., and the State of Hawai'i. Lands currently zoned for agriculture include those owned by the Eric A. Knudsen Trust, Green Energy Team, LLC, Anuhea Properties, LLC, and Kahi Na Wai Pu'ili LLC. Regarding conservation lands, the department, defined as the Department of Land and Natural Resources per HRS §183C-2,

> shall adopt rules governing the use of land within the boundaries of the conservation district that are consistent with the conservation of necessary forest growth, the conservation and development of land and natural resources adequate for present and future needs, and the conservation and preservation of open space areas for public use and enjoyment. [HRS §183C-4(b)]

Accordingly, the "department shall establish zones within the conservation district, which shall be restricted to certain uses" (HRS §183C-4[d]). Specifically:

> The department, by rules, may specify the land uses permitted therein which may include, but are not limited to, farming, flower gardening, operation of nurseries or orchards, growth of commercial timber, grazing, recreational or hunting pursuits, or residential use. The rules may control the extent, manner, and times of the uses, and may specifically prohibit unlimited cutting of forest growth, soil mining, or other activities detrimental to good conservation practices. [HRS §183C-4(d)]

According to *The Garden Island*, the "conservation of necessary forest growth," and the "development of land and natural resources" (HRS §183C-4[b]) is increasingly threatened by feral pigs (Lyte 2015). The newspaper states, "Ubiquitous, menacing and ruinous to crops and native plantings, Kauai's feral pigs are a problem. They are widespread, found everywhere except isolated parts of the Napali Coast. And they're capable of year-round breeding" (Lyte 2015).

3.4 Previous Archaeological Research

Numerous archaeological studies have been conducted in the vicinity of the Lāwa'i Solar project area. Table 2 summarizes these previous archaeological studies, and their locations are depicted on Figure 25. The locations of historic properties are depicted on Figure 26. A brief description of each archaeological study is also included in this section.

3.4.1 Bennett 1931

The first comprehensive archaeological survey on the island of Kaua'i was undertaken by Wendell Bennett in 1929; his work was published in 1931. Bennett attempted to confirm sites (*heiau*) previously described by Thrum, as well as identify additional significant sites. Most of Bennett's sites are beyond the area covered in Figure 25 and Figure 26. Only SIHP # 50-30-10-0072 (Bennett Site 72, Nuikapukapu Heiau), and SIHP # 50-30-10-0072 (Bennett Site 73, stone work) are in the vicinity of the project area (also noted in Section 3.5.1 below).

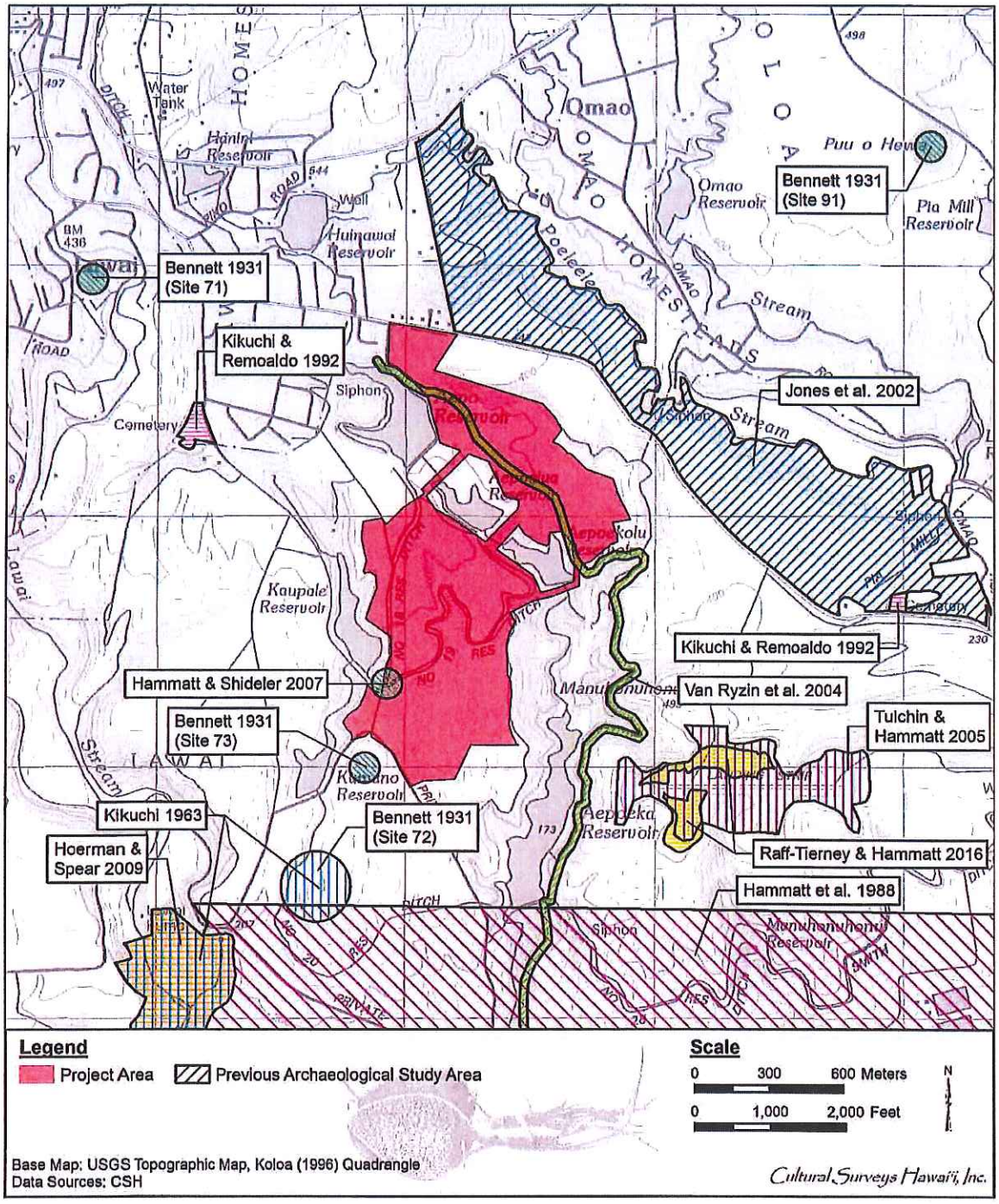

Figure 25. Portion of 1996 Koloa USGS topographic quadrangle, showing previous archaeological studies in the immediate vicinity of the project area

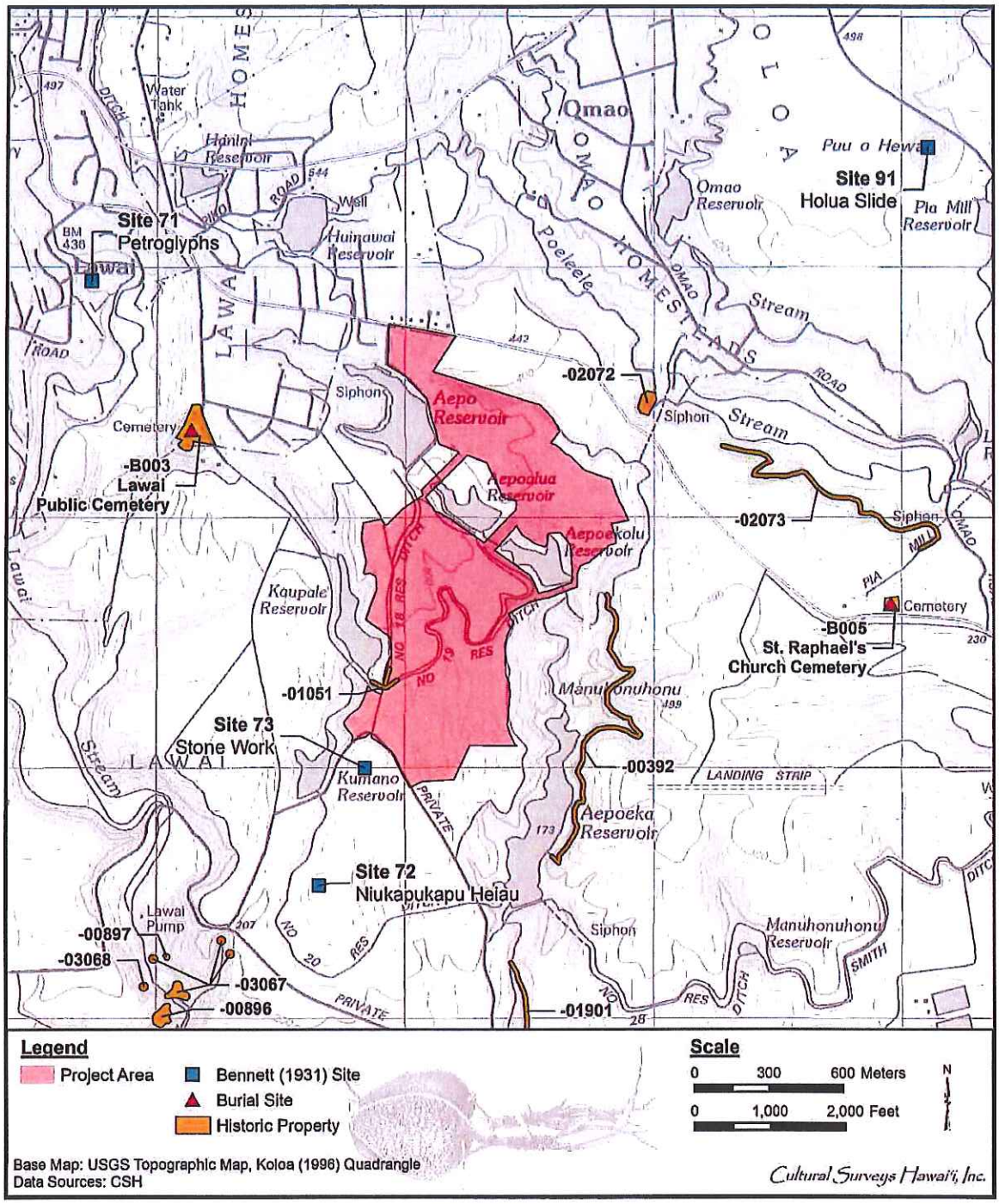

Figure 26. Portion of 1996 Koloa USGS topographic quadrangle, showing archaeological sites identified during previous archaeological studies

Table 2. Previous archaeological studies and historic properties within and near the Lāwa'i Solar project area (organized by date)

Study	Location	Nature of Study	Description (SIHP # 50-30-10)
Bennett 1931	Island-wide	Site survey	Site 71 (Petroglyphs), Site 72 (Niukapukapu Heiau), Site 73 (Stone Work), and Site 91 (Holua Slide)
Kikuchi 1963	Kōloa District	Archaeological surface survey and test excavations	Sites 56 and 57 (SIHP #s -3071 and -3072 respectively), coastal shelter caves near Spouting Horn
Hammatt et al. 1988	1,000 acres of Kukui'ula Bay Community	Archaeological inventory survey	Recorded pre-Contact and historic-era archaeological sites (including some previously identified): SIHP #s -1912, -1922, -1924, -1934, -1936, -1941, and -1945 (agricultural complex); SIHP #s -1803, -1930, -1937, and -1948 (habitation complex); SIHP #s -1906, -1907, -1921, -1925, -1928, -1929, -1938, -1942, -1946, -1947, -1949, -1950, -1951 (habitation/ agricultural complex); SIHP # -1927 (habitation/agricultural complex and human remains); SIHP #s -1913, -1917, -1918, -1919, -1932, -1940, -1905, -1931, and -1944 (platforms); SIHP #s -1909 and -1925 (platform and *'auwai*); SIHP #s -1901, -1902 (*'auwai*); SIHP # -1910 (wall and *'auwai*); SIHP # -1952 (wall and platform); SIHP # -1926 (wall); SIHP #s -1904 and -1943 (site remnant); SIHP # -1935 (enclosure); SIHP # -1914 (habitation cave); SIHP #s -1920 and -1923 (modified outcrop); SIHP # -1916 (mound); SIHP # -1911 (historic house site); SIHP # -1933 (historic railroad berm); SIHP # -1908 (historic structure foundations); and SIHP # -1903 (possible *heiau* remnant)

Study	Location	Nature of Study	Description (SIHP # 50-30-10)
Kikuchi and Remoaldo 1992	Kaua'i Island	Island-wide cemetery inventory	Burial sites in vicinity of project area: SIHP # -B003 (Lāwa'i Public Cemetery); SIHP # -B005 (St. Raphael's Church)
Jones et al. 2002	'Ōma'o, Kōloa Ahupua'a	Archaeological inventory survey	Identified SIHP # -2072 (terraces) and SIHP # -2073 (irrigation ditch for sugarcane)
Van Ryzin et al. 2004	Aepo water line, 'Ōma'o, Kōloa Ahupua'a	Archaeological inventory survey	Identified SIHP # -392 (irrigation ditch) and SIHP # -1901 (*'auwai*) previously identified by Hammatt et al. (1988)
Tulchin and Hammatt 2005	Pu'u Manuhonuhonu, Kōloa Ahupua'a	Archaeological inventory survey (recorded as an archaeological assessment)	No historic properties identified
Hammatt and Shideler 2007	KIUC Electrical Substation, Lāwa'i Ahupua'a, TMK: [4] 2-6-003:001 por.	Archaeological inventory survey	SIHP # -01051 (irrigation infrastructure)
Hoerman and Spear 2009	Allerton Gardens, Lāwa'i Ahupua'a	Archaeological reconnaissance survey, archaeological inventory survey	Identified SIHP # -893 (agricultural terraces); SIHP # -894 (habitation site); SIHP # -895 (two terraces); SIHP # -896 (*lo'i* complex); SIHP # -897 (habitation terrace); SIHP # -898 (Allerton Gardens wall); SIHP # -3069 (stone wall) previously identified by Kikuchi (1963); and SIHP # -3067 Feature C (*lo'i* terraces) previously identified by Kikuchi (1963)
Raff-Tierney and Hammatt 2016	Manuhonuhonu Borrow Site Phase 3, TMK: [4] 2-6-003:001 por.	Archaeological inventory survey (recorded as an archaeological assessment)	No historic properties identified

3.4.2 Kikuchi 1963

Kikuchi revisited 70 sites in the Kōloa District. Only one is within a mile of the project area; Bennett Site 72-Niukapu Heiau approximately one half mile southwest of the project area. Kikuchi did not revisit Bennett Site 73, the stone work site. None of the other sites revisited by Kikuchi in Lāwa'i and Kōloa *ahupua'a* are in close proximity to the project area, including Site 52 (Bennett Site 70-Mamalu Heiau in Lāwa'i Valley), SIHP #s 50-30-10-3067 through -3072, and seven sites in Kōloa Ahupua'a: SIHP #s -3073 through -3076 and -3086 through -3088. All of these 3000 series sites revisited by Kikuchi are in Lāwa'i Valley or along the sea coast a mile or more from the project area.

3.4.3 Hammatt et al. 1988

In 1988, CSH completed an archaeological inventory survey of the proposed 1,000-acre Kukui'ula Bay Planned Community, in Kōloa Ahupua'a (Hammatt et al. 1988). The project area stretched from Po'ipū Road on the east side to the edge of Lāwa'i Valley on the west side. A total of 58 archaeological sites comprising 150 individual features were located, mapped, and described. A majority of the sites were located in the non-cultivated lands in the eastern and southeastern portions of the project area. Both pre-Contact and historic sites were identified. The prehistoric sites are remnants of the former extensive late pre-Contact (early historic) irrigated agricultural complex that stretched eastward from Lāwa'i Valley to Weliweli. This complex includes *'auwai* (irrigation canals), fields, house sites, shelters, modified lava tubes, burials, and two *heiau*. Historic-era sites included cattle walls, abandoned cane fields, a house site, and remnants of a railroad berm. Many of the archaeological sites were in remnant condition due to modern land disturbance.

3.4.4 Kikuchi and Remoaldo 1992

Kikuchi and Remoaldo (1992) conducted a study to locate, map, and inventory post-Contact burial places on Kaua'i. Their study focused on cemeteries, graveyards, and family plots post-1800; traditional Hawaiian burials were not discussed.

St. Raphael's Church Cemetery in Kōloa Ahupua'a was mapped and inventoried in February 1986. Of the 224 documented grave sites, seven are marked as "unknown." St. Raphael's Church Cemetery is listed as SIHP # -B005. The Lāwa'i Public Cemetery in Lāwa'i Ahupua'a was not surveyed, but is listed as SIHP # -B003.

3.4.5 Jones et al. 2002

In 2002, CSH conducted an archaeological inventory survey with subsurface testing for the Moir Family Limited Partnership. The project area was an approximately 260-acre parcel at 'Ōma'o, in the Kōloa Ahupua'a. Two sites were identified: SIHP # -2072 and SIHP # -2073. SIHP # -2072 is associated with the LCA 3229 awarded to Eke 'Opunui for the cultivation of taro and sugarcane. Partly-eroded terraces were identified, as well as late-historic modern artifacts. SIHP # -2073 was identified as an irrigation ditch (now filled with colluvium) that was once associated with sugar plantation structures.

3.4.6 Van Ryzin et al. 2004

In 2004, an archaeological inventory survey was conducted for the Aepo Water Line project extending from the northwest corner of Parcel A toward Aepoeha Reservoir, terminating at Aepo

Reservoir. SIHP # -392, a historic irrigation ditch, was observed near Aepoeha Reservoir. The previously identified *'auwai* SIHP # -1901 was further documented.

3.4.7 Tulchin and Hammatt 2005

In 2005, CSH conducted an archaeological inventory survey (negative results recorded as an archaeological assessment) of an approximately 65-acre parcel in the Kōloa Ahupua'a at the request of the Kukui'ula Development Company, LLC. The project area, located along the southern slopes of Pu'u Manuhonuhonu, was proposed for development as a borrow pit. No historic properties were located within the project area's boundaries, as the project area was completely cultivated in pineapple by the Kaua'i Pineapple Company until 1964. No mitigation commitments were recommended.

3.4.8 Hoerman and Spear 2009

Scientific Consultant Services, Inc. (SCS), conducted an archaeological reconnaissance survey and an archaeological inventory survey in 2009 at the request of the National Tropical Botanical Garden. The approximately 90-acre project area is located in the Lāwa'i Ahupua'a (Hoerman and Spear 2009), at Allerton Gardens.

During the survey, six sites were newly identified. The six sites comprise agricultural terraces, habitation sites, and habitation terraces. One site and one feature previously identified by Kikuchi (1963) (a stone wall and a series of *lo'i* terraces) were confirmed and documented (Hoerman and Spear 2009). All seven sites and one feature were found to be significant under Criterion d, information content (Hoerman and Spear 2009). SCS recommended the entire project area be preserved under its use as a portion of the existing Allerton Gardens (Hoerman and Spear 2009).

3.4.9 Raff-Tierney and Hammatt 2016

In 2016, CSH conducted a systematic archaeological inventory survey (presented in an archaeological assessment) for the Manuhonuhonu Borrow Site Phase 3 project in the uplands north of the Kukui'ula Community Development area. A pedestrian inspection identified no significant historic properties. No further historic preservation work was recommended.

3.5 Previous Archaeological Studies within or adjacent to the Current Project Area

3.5.1 Bennett 1931

The first comprehensive archaeological survey on the island of Kaua'i was undertaken by Wendell Bennett in 1929; his work was published in 1931. Bennett attempted to confirm sites (*heiau*) previously described by Thrum, as well as identify additional significant sites.

Bennett's reconnaissance survey identified 12 pre-Contact sites in the *ahupua'a* of Lāwa'i and Kōloa: five sites in Lāwa'i Ahupua'a: Site 69 (Kalohiokapua Heiau), Site 70 (Mamalu Heiau), Site 71 (petroglyphs), Site 72 (Nuikapukapu Heiau), and Site 73 (stone work); seven sites in Kōloa Ahupua'a: Site 74 (fishing shelter), Site 75 (Kūhiō Park), Site 76 (salt pans), Site 80 (Kihouna Heiau), Site 81 (Kaneiolouma Heiau), Site 91 (*hōlua* slide), and Site 92 (Kanehaula Heiau). Bennett's Site 73 is located beyond the south boundary of the project area.

3.5.2 Hammatt and Shideler 2007

In 2007, CSH conducted an archaeological inventory survey in the *ahupua'a* of Lāwa'i for the Kukui'ula Development Company, LLC. The approximately 1.0-acre project area was proposed for a Kaua'i Island Utility Cooperative electrical substation (Hammatt and Shideler 2007). The 2007 AIS project area is located within the central, southwestern portion of the current project area.

One site, SIHP # -01051, was identified as McBryde Sugar Company Irrigation Infrastructure. The site has two features: No. 18 Reservoir Ditch (Feature A) and No. 19 Reservoir Ditch (Feature B). Both features are earthen ditches and were likely constructed between 1904 and 1912. The site was determined to be significant under Criteria d for information content only and no further archaeological documentation work was recommended.

3.6 Background Summary and Predictive Model

Handy (1940:65) relates that although there were three major streams in Kōloa (Poeleele, Omau, and Waihohonu), "So far as Judge Blake knows, however, there were no terraces along these upper streams." Handy (1940:59) also relates there was little if any forest planting of taro or even dryland taro. This idea is reinforced by the small number of *kuleana* claims within the *ahupua'a*, most of which consisted of a house lot near the shore and *lo'i* in the stream bottoms. No successful LCA claims were made in the project area. Lāwa'i was also associated with the McBryde family in the nineteenth century, first as part of the Wahiawa Ranch, then as part of the McBryde Sugar Company (Burke and Hammatt 2013:43–46). There is no known physical evidence of pre-Contact land use in the project area. Land modification for sugarcane cultivation infrastructure and cane field remnants are extant and it is believed cane cultivation might have destroyed any pre-Contact features. The prospect of discovering traditional Hawaiian sites within the current project is considered to be low to none. If new historic properties are identified during execution of the project, they would most likely be associated with sugar plantation agriculture.

Section 4 Results of Fieldwork

The fieldwork component of the archaeological inventory survey was conducted from 2 May 2017 to 26 May 2017 by Johnny Dudoit, B.A., Tyler Turran, B.A., and Missy Kamai, B.A., under the general supervision of Principal Investigator Hallett H. Hammatt, Ph.D. This work required approximately 19 person-days to complete. CSH completed the fieldwork component of this AIS under archaeological fieldwork permit number 17-08, issued by the SHPD pursuant to HAR §13-282.

4.1 Pedestrian Survey Results

The pedestrian survey of the project area revisited SIHP # 50-30-10-1051 (SIHP # -1051) Feature A–No. 18 Reservoir Ditch (Ditch 18) and Feature B–No. 19 Reservoir Ditch (Ditch 19) of the McBryde Sugar Plantation first documented by Hammatt and Shideler (2007).

SIHP # -1051 is the historic places site number used herein for all of the McBryde Sugar Plantation infrastructure components in the project area. Five new feature groupings in addition to Feature A-Ditch 18 and Feature B-Ditch 19 from Hammatt and Shideler (2007) were newly documented. These are SIHP # -1051 Feature C, the plantation road or transportation network; SIHP # -1051 Feature D, consisting of two field berms presumed used in irrigation control; and SIHP # -1051 Feature E, the Aepo Stream reservoir system consisting of four reservoirs. A number of components of each of these feature groups documented as a result of this study are numbered numerically 1 through 1+n preceeded by the feature letter with which they are associated. The features and components are summarized in Table 3 and their locations are depicted on Figure 27 through Figure 29.

SIHP # -1051 Feature F—an *a'uwai* segment—and Feature G—an irrigation pipe—are single feature components identified during the pedestrian survey but are no longer within the final AES Lawai Solar project area boundary. Nevertheless, these features are included in Figure 27 and Table 3.

Similarly, SIHP -0073, identified by Bennet, was revisited but is no longer within the project area.

Table 3. Historic properties identified within the project area

Site	Feature	Type	Function	Constructed	Present Condition
SIHP # -1051	A	Open ditch with culverts and sluice gates	McBryde sugar plantation irrigation infrastructure	Pre-1910-1912	Plantation closed; ditch is non-functioning
	A1	Basalt boulder and mortar headwall of culvert of corrugated metal pipe	Headwall and culvert beneath road Feature C1, and junction with SIHP # 1051 Feature B-Ditch 19	Unknown	Non-functioning
	A2	Culvert of corrugated metal pipe with headwalls	Headwalls and culvert, (road crossing is no longer present)	Unknown	Non-functioning
	A3	Sluice gate 1	Allows Ditch 18 water to be diverted into Ditch 19	Unknown	Non-functioning
	A4	Sluice gate 2	Allows Ditch 18 water to continue to flow *makai* in Ditch 18	Unknown	Non-functioning
Site	**Feature**	**Type**	**Function**	**Constructed**	**Present Condition**
SIHP # -1051	B	Open ditch with culverts and sluice gates	McBryde sugar plantation irrigation infrastructure	Pre-1910-1912	Plantation closed; ditch is non-functioning
	B1	Culvert of metal pipe with concrete sluice gate as east headwall	Culvert and sluice gate controlling flow of combined Ditch 18 and Ditch 19 water to west beneath road Feature C1	Unknown	Non-functioning

	B2	Culvert of corrugated metal pipe	Egress of water from Ditch 18 into Ditch 19 beneath discontinuous road bed (Feature A1 is point of ingress into culvert)	Unknown	Non-functioning
	B3	Basalt and concrete retaining wall	Erosion control on curve within Ditch 19	Unknown Fig 55, 56, 57	Non-functioning
	B4	Culvert of steel and corrugated pipe with wingwalls and headwall on north *mauka* end	Culvert under Feature C5 road segment	Unknown	Non-functioning
	B5	South end of buried culvert of Ditch 19; part of B6	Culvert for road crossing of Ditch 19	Unknown	Non-functioning
	B6	North end of buried culvert of Ditch 19; part of B5	Culvert for road crossing of Ditch 19	Unknown	Non-functioning
	B7	Concrete sluice gate in Ditch 19	Controlling water flow to *makai* within Ditch 19	Unknown	Non-functioning
	B8	Corrugated metal culvert pipe 12.5 m long in Ditch 19	Erosion control of east side of ditch adjacent to Aepoalua Reservoir	Unknown	Non-functioning

	B9	Concrete culvert pipe	Undetermined if originally part of Ditch 19 outside project area	Unknown	Non-functioning
	B10	Metal pipe culvert with concrete wingwalls and headwall	Culvert beneath road Feature C2 on west end of Aepo Reservoir dam	Unknown	Non-functioning
	B11	Basalt boulder platform	Water diversion to Feature B10 culvert under road Feature C2	Unknown	Non-functioning
Site	**Feature**	**Type**	**Function**	**Constructed**	**Present Condition**
SIHP # -1051	C	Plantation roads	Transportation system, vehicular roads	Unknown	Some roads continue in use by current tenant farmers and by landowner
	C1	Unimproved dirt road (Ako Rd at north end)	Vehicular road	Unknown	Continues to be in use
	C2	Unimproved dirt road	Vehicular road	Unknown	Continues to be in use
	C3	Unimproved dirt road	Vehicular road	Unknown	Continues to be in use
	C4	Unimproved dirt road	Vehicular road	Unknown	Continues to be in use
	C5	Unimproved dirt road segment	Vehicular road segment over culvert in Ditch 19	Unknown	Appears abandoned; unable to trace former route from culvert Feature B3-B4 in either direction

	C6	Unimproved dirt road	Vehicular road	Unknown	Continues to be in use
Site	**Feature**	**Type**	**Function**	**Constructed**	**Present Condition**
SIHP # -1051		Earthen berms	Field boundaries	Unknown	Grassed over for pasture
	D1	Earthern berm	Agriculture field boundary; water diversion	Pre-1951	Abandoned
	D2	Earthern berm	Agriculture field boundary; water diversion	Pre-1951	Abandoned
Site	**Feature**	**Type**	**Function**	**Constructed**	**Present Condition**
SIHP # -1051	E	Aepo Steam Reservoir System	Plantation agriculture irrigation water management	Post-1910	
	E1	Aepo Reservoir	Plantation agriculture irrigation water management	Unknown	Dam in place; water present in reservoir; outside project area
	E2	Aepoalua Reservoir	Plantation irrigation water reservoir	Unknown	Dam in place
	E3	Aepoekolu Reservoir	Plantation irrigation water reservoir	Unknown	Dam in place
	E4	Aepoeha Reservoir	Plantation irrigation water reservoir	Unknown	Dam in place; water present in reservoir
	E5	Two rectangular stepped concrete slabs and walls	Water control, spillway from Aepoalua Reservoir Feature E2 to Aepoekolu Reservoir Feature E3	Unknown	In disrepair
	E6	Concrete slab in road Feature C3	Indeterminate; possible buried road culvert or ditch from Aepoekolu Reservoir	Unknown	Buried; outside project area

			(Feature E3) releasing water to Aepoeha Reservoir (Feature E4)		
Site	**Feature**	**Type**	**Function**	**Constructed**	**Present Condition**
	F	Ditch section	McBryde sugar plantation irrigation infrastructure		In disrepair; outside project area
	G	Pipe	McBryde sugar plantation irrigation infrastructure		Abandoned; outside project area
Site	**Feature**	**Type**	**Function**	**Constructed**	**Present Condition**
50-30-10-0073		Rock clearance mound	Agricultural field improvement	Pre-1931	Enlarged by additional plantation rock clearing; outside project area
	0073-1	Rock clearance mound	Agricultural field improvement	Post-1931	Not in use; outside project area

5.1.4.2 SIHP # -1501 Feature D-2, the south berm, runs in a northeast/southwest direction and measures 362.0 m. In the 1951 USGS aerial photo of the project area, this feature appears to have been part of the plantation fields, most likely as field dividers, possibly used to control flow of surface water (see Figure 27 through Figure 29). The width and heights of the berm vary from 1.0 m to 2.0 m in width and 0.30 m to 0.55 m in height (Figure 84 and Figure 85).

Figure 84. Photo of SIHP # -1501 Feature D-2, south berm, west end, view to southwest

Figure 85. Photo of SIHP # -1501 Feature D-2, south berm, central location showing height, view to southeast

5.1.5 SIHP # 50-30-10-1051 Feature E-Aepo Reservoir System

There are four reservoirs in the vicinity of the AES project area. They were built in the early twentieth century in the Aepo stream drainage gully for irrigation water for the sugarcane plantation. The most upstream reservoir is named Aepo and each successive reservoir downstream to *makai* is named in numerical sequence. The spelling of the numbers in the reservoir names varies from one map or document source to another; in this report we have used *'alua* (two), *'ekolu* (three), and *'ehā* (four), thus Aepoalua Reservoir, Aepoekolu Reservoir, and Aepoeha Reservoir.

The *mauka*-most or upper three reservoirs are bounded by but outside the project area. Three shaded-area crossings on the historic property location map (see Figure 27 through Figure 29) are included in the project area and will potentially carry an overhead electric transmission line for the project, connecting the northern portion of the project area with the southern portion, but no ground disturbing activity will occur there.

There are roads crossing the top of each of the three reservoir dams; the forth reservoir Aepoeha is well south outside the project area and was not visited. Because they are not in the project area, construction data on the reservoirs or dams has not been reviewed in detail but the dams appear to be earthen and rock berms and they measure approximately 120.0 m or .07 miles to 140 m or .09 miles across. The reservoirs and dam crossing roads are clearly visible on aerial maps at Aepo Reservoir north of the project area, and in the field at Aepoalua Reservoir; Aepoekolu Reservoir berm road and dam are obscured by heavy vegetation.

5.1.5.1 SIHP # -1051 Feature E-1

Feature E-1 Aepo Reservoir is more square in comparison to the other three reservoirs and is very roughly estimated at about 2 to 3 hectares (5 to 6 acres) in size using Google Earth (see Figure 27 through Figure 29). Elevation of the dam is approximately 420 ft above mean sea level.

Figure 86. Photo of the road atop Aepo Reservoir dam, Aepo Reservoir is to the left, Aepoalua Reservoir is to the right, view to northeast

5.1.5.2 SIHP # -1051 Feature E-2

Feature E-Aepoalua Reservoir is rectangular in comparison to the other three reservoirs and is very roughly estimated at about 2 hectares (5 acres) in size using Google Earth (see Figure 27 through Figure 29). Elevation of the dam is approximately 360 ft above mean sea level.

Figure 87. Photo of the road atop Aepoalua Reservoir dam, Aepoalua Reservoir is to the right, Aepoekolu Reservoir is to the left, view to southwest; SIHP # -1051 Feature E-5 spillway, is located at the end of this dam just before the trees

5.1.5.3 SIHP # -1051 Feature E-3

Feature E-Aepoekolu Reservoir may be elongated and rectangular in comparison to the other three reservoirs, including the heavily vegetated areas below Aepoalua dam. Aepoekolu Reservoir is very roughly estimated also at about 2 hectares or 5 acres in size using Google Earth (see Figure 27 through Figure 29). Elevation of the dam is approximately 320 ft above mean sea level.

5.1.5.4 SIHP # -1051 Feature E-4

Feature E-Aepoeha Reservoir is located outside the project area at least 500 m or 0.31 miles downstream to the south *makai* from Aepoekolu Reservoir. It is long and narrow in contrast to the other three reservoirs and is very roughly estimated at about 12 hectares or 30 acres in size using Google Earth (see Figure 27 through Figure 29). Elevation of the dam is approximately 120 ft above mean sea level.

5.1.5.5 SIHP # -1501 Feature E-5

Feature E-5 is a spillway between Aepoalua and Aepoekolu reservoirs. The spillway consists of two concrete slabs or platforms with side walls that are stepped down to the southeast. The spillway is situated at the western corner of Aepoekolu Reservoir at the southwest end of the road Feature C-4 crossing the dam. The spillway allowed overflow from Feature E-2, Aepoalua Reservoir into Feature E-3, Aepoekolu Reservoir.

The top platform located along the dam road measures 17.0 m (northeast/southwest) by 5.0 m (northwest/southeast) with a thickness of approximately 0.20 m. The sidewalls protruding from the concrete floor stand at 0.90 m high and have a thickness of 0.15 m. The lower platform extends out 15.0 m and is approximately 10.0 m wide. The sidewalls are 0.90 m thick. The concrete floor of the bottom concrete platform also measures 0.20 cm thick. The ground surface measures approximately 7.2 m below the top platform (Figure 88 through Figure 91; see Figure 27).

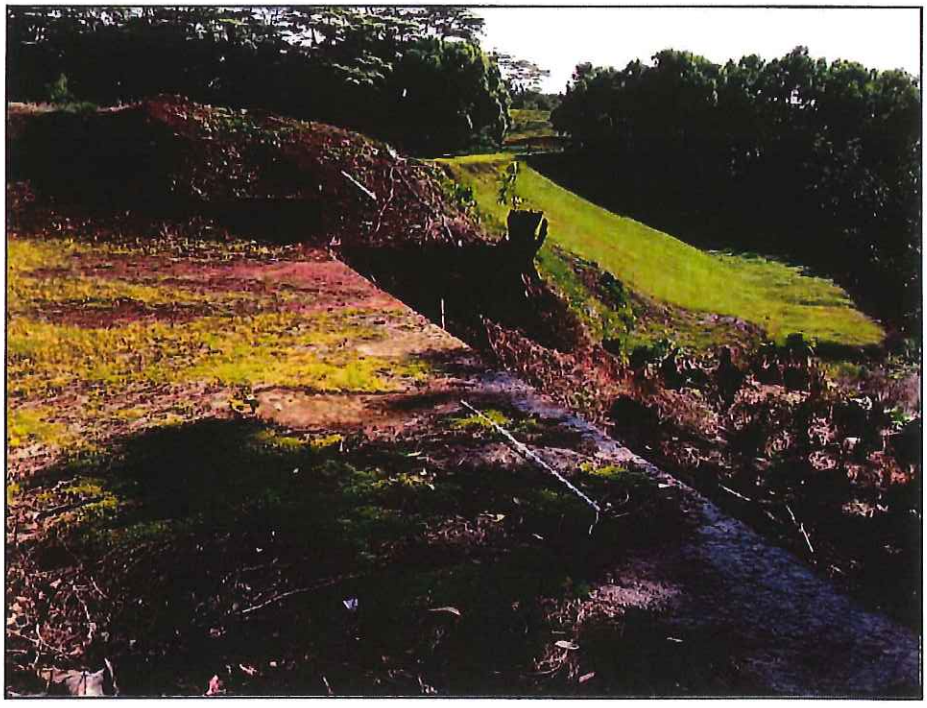

Figure 88. Photo of SIHP # -1501 Feature E-5 top concrete platform with north sidewall, view to northeast; note Feature C-4 road along the top of the dam at the center background

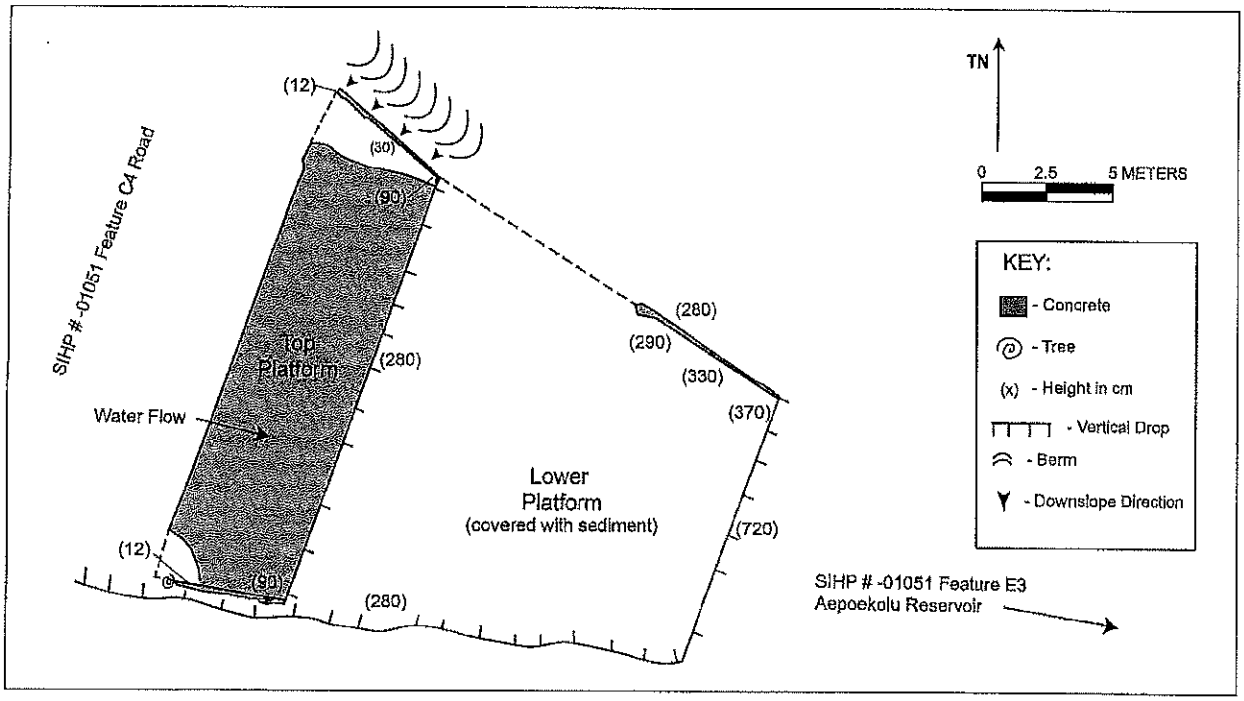

Figure 89. Plan view of SIHP # -1501 Feature E-5, water flow is from right to left

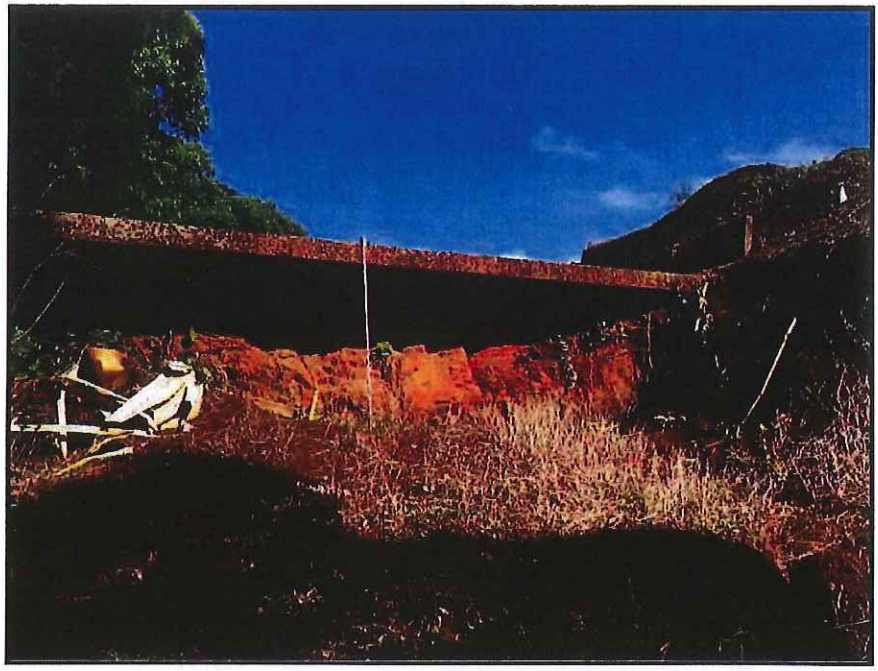

Figure 90. Photo of SIHP # -1501 Feature E-5, top platform from the bottom platform, view to northwest

Figure 91. Photo of SIHP # -1501 Feature E-5, lower platform's north sidewall, view to southeast

5.1.5.6 SIHP # -1051 Feature E-6

Feature E-6 is a rectangular-shaped concrete slab in road Feature C-3 upon the dam of Aepoekolu. Its purpose and function are undetermined although its linear orientation within the roadbed possibly suggests it is part of a buried road culvert structure or relief causeway or ditch from Aepoekolu Reservoir (Feature E-3) releasing water into the drainage to Aepoeha Reservoir (Feature E-4) downstream. The feature is outside the project area. The slab measures 2.0 m (east/west) by 0.40 m (north/south), is flush with the ground surface at the west end and 10 cm above the ground at the east. The concrete slab is firmly embedded in the old road (Figure 92 and Figure 93). Due to the present state of the historic property as well as location, the function of this feature could not be determined.

Figure 92. Photo of SIHP # -1501 Feature E-6, concrete slab embedded in road Feature C-3 on the Aepoekolu dam, view to northeast

Figure 93. Photo of SIHP # -1501 Feature E-6, concrete slab embedded in road Feature C-3 on Aepoekolu dam, view to east

5.1.6 SIHP # 50-30-10-1051 Feature F-Ditch Remnant

Feature F is a remnant portion of a ditch. This feature is now located outside the AES project area to the southeast as a result of a revision of the project area from 291 acres to 221 acres during the AIS fieldwork. The ditch remnant measures 161.0 m in length with internal measurements of 2.2 m wide and 1.2 m deep as well as external measurements from outer berm edge to outer berm edge of 4.4 m wide and berm heights from 1.8 to 3.0 m high. There was a heavy concentration of basalt observed at the base of the ditch, along the edges, and on the berm. No culvert was observed.

5.1.7 SIHP # 50-30-10-1051 Feature G-Pipe

Feature G consists of a steel pipe protruding out of a hillside. This feature is now located outside the AES project area to the southeast as a result of a revision of the project area from 291 acres to 221 acres during the AIS fieldwork. The pipe measures 23 cm in diameter with a thickness of 2 cm and extends 95 cm. The pipe is oriented in an east/west direction (Figure 94).

Figure 94. Photo of SIHP # -1051 Feature G, view to north

5.2 SIHP # 50-30-10-0073

FORMAL TYPE:	Clearance mound, "Stone Work"
FUNCTION:	Agriculture, field-rock clearing mound
NUMBER OF FEATURES:	2
AGE:	Unknown
TAX MAP KEY:	TMK [4] 2-6-003:001 por.
LAND JURISDICTION:	Private
PREVIOUS DOCUMENTATION:	Bennett 1931

In 1931, Wendell Clark Bennett surveyed principal sites on the island of Kaua'i. Bennett's Site 72 (now SIHP # 50-30-10-0072, Niukapu Heiau) located inland east of Lāwa'i Stream is one of those historic properties, but is not in the survey area, being almost one-half mile or 600 m to the south.

Bennett's Site 73 (now SIHP # 50-30-10-0073, field-rock clearance mound) as shown on his site map (Bennett 1931:98) is also inland east of Lāwa'i Stream but is well *mauka* of Niukapu Heiau (SIHP # 50-30-10-0072).

SIHP # 50-30-10-0073 (SIHP # -0073) was initially within the AES project area subject to inventory survey and was revisited as part of the inventory survey project area. However, as a result of a revision of the project area from 291 acres to 221 acres during the AIS fieldwork, the historic property is now located outside the AES project area to the southeast. Bennett describes SIHP # -0073 as "Stone work, on the hill just inland from Site 72" with the following description:

> On this hill is considerable mass stonework. The top of the hill has an irregular, rectangular structure of stone walls on the four sides, but not on the center of the top. These walls are 15 to 20 feet thick, or wide; built up 3 to 5 feet on the outside and flush with the ground on the inside. They are not everywhere continuous, but the impression given is that they were continuous at one time. Portions of the walls are so roughly laid that it appears to be cleared stone from the plantation, but other portions seem well made. [Bennett 1931:117]

During the current archaeological survey, SIHP # -0073 was revisited, noting substantial modifications caused by field clearance. The "stone work" is oriented in a northeast/southwest direction and now measures 30 m by 17 m; the maximum height of 2.5 m is much greater than described by Bennett (1931:117) (Figure 95 through Figure 99). Within the site, concrete, PVC, and irrigation drip lines were observed below basalt boulders as well as surrounding the site. Two buried segments of rock facing aligned southwest-northeast and northwest-southeast may have been produced by rough stacking of rocks but alternately might represent two of the four interior walls described by Bennett (1931). A low area in the mound has less rock than the edges and may possibly be the interior portion described by Bennett. If so, the buried rock facings may reflect mounding techniques of creating a perimeter of rock and then filling it. A large dirt pile is present along the southeast edge suggesting bulldozing occurred at the site at a later stage in agricultural activity in the area.

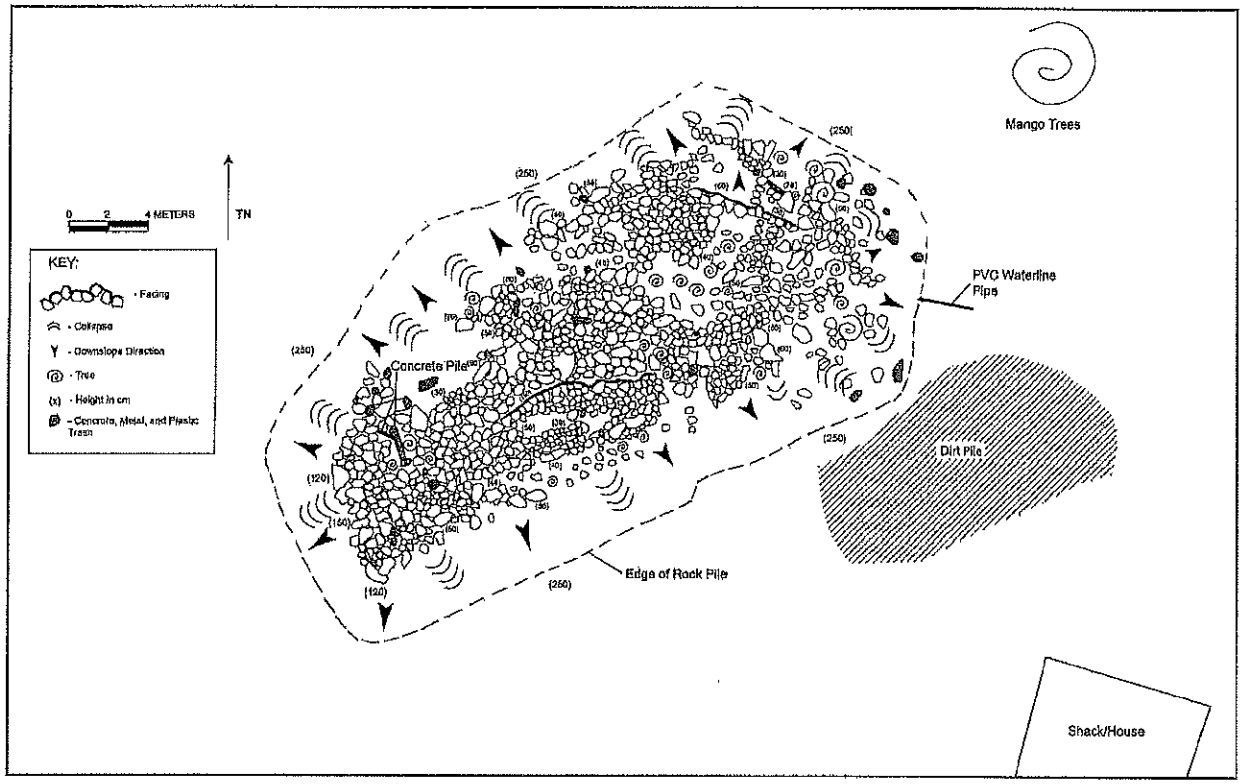

Figure 95. Plan view of SIHP # -0073; north is *mauka*, the general downslope direction is to the south *makai*

Figure 96. Photo of SIHP # -0073, top of northeast edge, view to northwest

Figure 97. Photo of north edge of SIHP # -0073, view to south

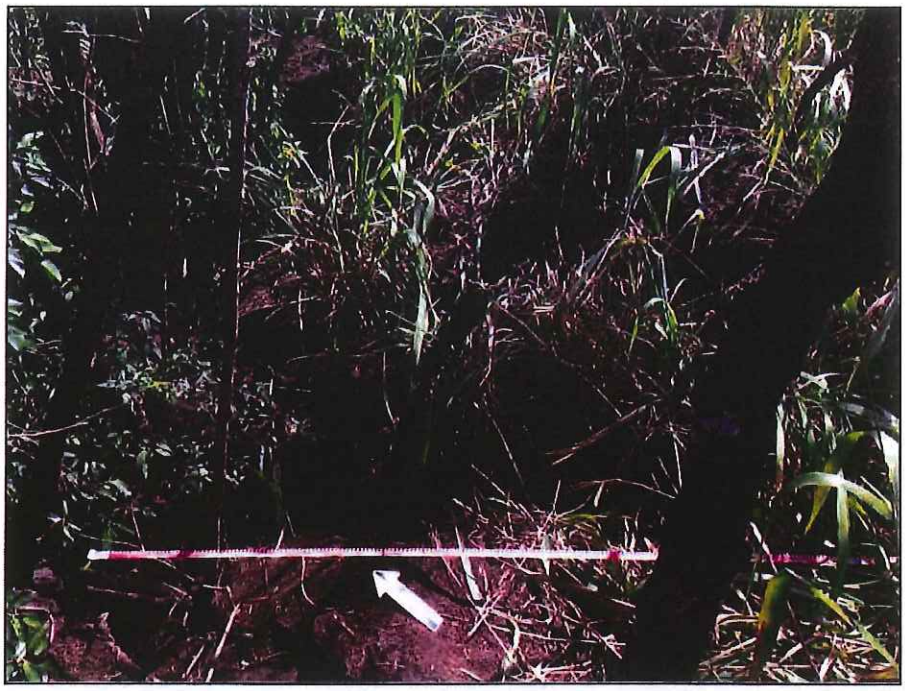

Figure 98. Photo of southwest edge of SIHP # -0073, view to northeast

Figure 99. Photo of west edge of SIHP # -0073, view to east

Approximately 18 m southeast of SIHP # -0073 are an abandoned shed with the date "7-18-99" inscribed in the concrete floor (Figure 100 through Figure 102Figure 105), a lean-to with table and chairs, and assorted modern rubbish. Two abandoned vehicles are near the structures (Figure 103 and Figure 105). The house and garage were not given an historic property number due to the modern date and materials associated with the structures.

Figure 100. Photo of the exterior of the abandoned shack/house, southeast of Site 73, view to southwest

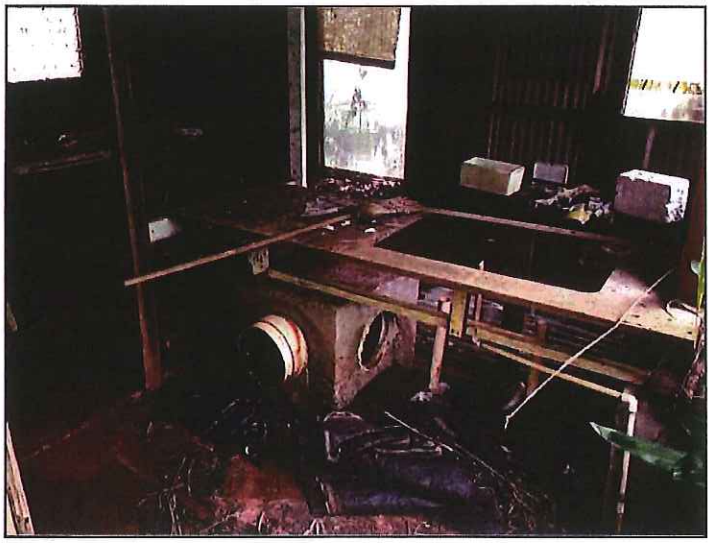

Figure 101. Photo of the interior of the abandoned shack/house, southeast of Site 73, view to southwest

Figure 102. Photo of date discovered on the concrete floor of the abandoned shed, southeast of Site 73

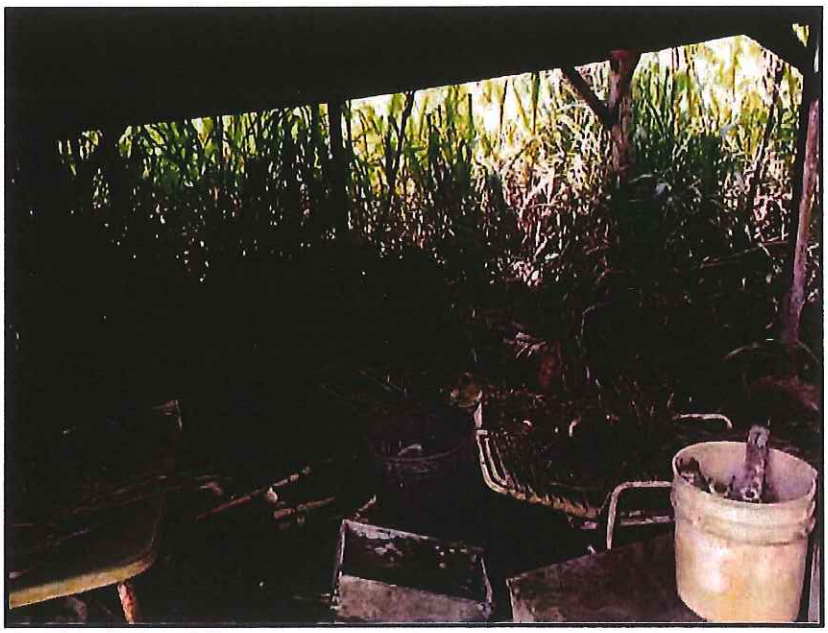

Figure 103. Photo of a lean-to southwest of the house, possibly once a carport later utilized as a "meeting place"; view to south, southeast of Site 73

Figure 104. Photo of abandoned Ford F-150 truck just southeast of the abandoned house, view to east, southeast of Site 73

Figure 105. Photo of abandoned recreational vehicle, "buggy," southwest of the abandoned house, view to north, southeast of Site 73

5.2.1 SIHP # 50-30-10-0073 Feature 0073-1-Clearance Mound

Feature 0073-1 consists of a U-shaped boulder pile or field-rock clearance mound measuring 22.0 m from the north-upslope to the south-downslope by 11.7 m (east/west) (Figure 106 through Figure 110). The clearance mound is made of large subangular boulders at the bottom and with medium to small boulders on top with a maximum height of 2.07 m. The large boulders at the bottom of the pile show evidence of scarification suggesting Feature 0073-1 is partially a bulldozer push from field-rock clearance (Figure 106). On the northern end of the clearance mound, there is evidence that head-sized cobbles were manually stacked on the clearance mound instead of machine assisted (see Figure 108). Broken concrete pipe, metal fragments, and PVC pipes as well as plastic drip lines were observed in and around the push pile (see Figure 111). Feature 0073-1 is located approximately 30.0 m south from Site 73 (Bennett's site) and approximately 20 m south of the old shack/house.

Figure 106. Photo of boulder with scarification at Feature 0073-1, top of photo is northwest; downslope from the feature is to the right in the photo

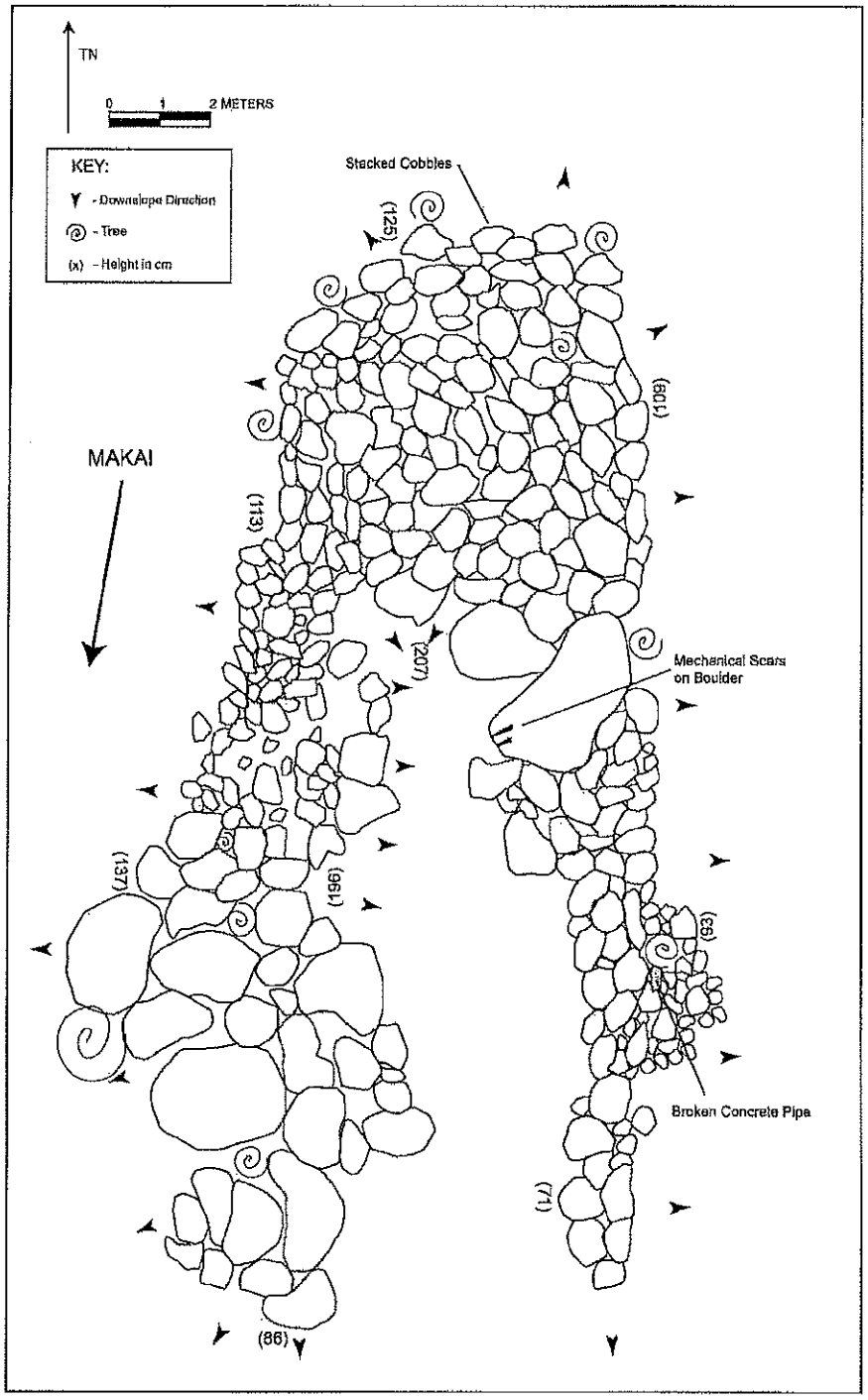

Figure 107. Plan view of Feature 0073-1; north or left is upslope *mauka* in the figure; downslope *makai* is to the right

Figure 108. Photo of stacked subangular basalt cobbles and boulders on the north end of the push pile (Feature 0073-1)

Figure 109. Overview photo of Feature 0073-1, view to north

Figure 110. Overview photo of Feature 0073-1, view to south

Figure 111. Photo of crumpled sheet metal observed in push pile (Feature 0073-1), view to north

Figure 112. Photo of broken concrete pipe on the east portion of the push pile (Feature 0073-1), view to northeast

Section 6 Summary and Interpretation

At the request of CH2M Hill, CSH has prepared this AISR for for the AES Lawai Solar and Storage project, Lāwa'i and Kōloa Ahupua'a, Kōloa District, Kaua'i, TMK: [4] 2-6-003:001 por. The project area is bounded by Lāwa'i Town on the northwest, to the north by Koloa Road, Aepoeha Reservoir on the southeast, Kaupale and Kumano reservoirs on the southwest and coffee fields to the south, approximately 2 km north of the coast.

Background research included various mythological and traditional accounts as well as early historic information from the Kōloa (formerly Kona) District of Kaua'i. In comparison to the district level there is little documentation specific to Kōloa and Lāwa'i at the *ahupua'a* level prior to the nineteenth century. A few traditional and mythological accounts refer to Lāwa'i and Kōloa *ahupua'a* and make reference to some place names within the two *ahupua'a*. However, some of the names are difficult to place as more recent names may have supplanted the traditional Hawaiian place names referred to in older accounts.

Kōloa is the site of the first organized sugar plantation in Hawai'i. Ladd and Company leased about 1,000 acres for the sole purpose of growing sugarcane. Kōloa Town and Kōloa Landing became prominent commercial centers during the mid- to late 1800s, exporting a variety of products such as sweet potatoes, sugar, and molasses. Whalers also stopped for provisions of squash, salt, salt beef, pigs, and cattle. This heightened activity dramatically altered the social structure and landscape of Kōloa.

In general, fieldwork for this AIS included 100% pedestrian inspection of the project area and GPS data collection. The project area includes former sugarcane fields of the McBryde plantation. Much of the property is now leased to individuals for cattle and other agricultural endeavors. Other vegetation within the project area generally consisted of guinea grass (*Megathyrsus maximus*) *haole koa* (*Leucaena leucocephala*), Christmas berry (*Schinus terebinthifolius*), coconut (*Cocos nucifera*), *heliconia*, coffee (*coffea*), *albizia* trees, and pine trees (*pinus*).

Two historic properties were confirmed during the inventory survey of the AES Solar and Storage project. These are SIHP # -0073, Niukapu Heiau and SIHP # -1051, McBryde sugarcane plantation infrastructure.

SIHP #s -0073 was first identified and described by Wendell C. Bennett (1931) and was revisited and documented as to its present condition. It is interpreted as an agricultural field-rock clearance mound significantly changed in dimensions since first being identified. A second field-rock clearance mound was found in the vicinity of SIHP # -0073 and is documented as SIHP # -0073 Feature 1.

SIHP # -1051 was first identified by CSH in 2007 during an archaeological inventory survey (Hammatt and Shideler 2007). During the survey (Hammatt and Shideler 2007) recorded the No. 18 Reservoir Ditch (now SIHP # -1051 Feature A) and the No. 19 Reservoir Ditch (now SIHP # -1051 Feature B).

During this archaeological inventory survey, SIHP # -1051 Features A and B were revisited and 16 additional components of the ditches were documented. Five new feature groupings were

documented. These are Feature C-Plantation roads, Feature D-Earthen field berms, Feature E-Aepo Reservoir system and, outside the final project area, Feature F-Ditch segment and G-Pipe section.

All historic properties previously identified within the AES Lawai Solar and Storage project area (SIHP # -1051 Features A and B in Hammatt and Shideler 2007) and the historic properties identified during this AIS investigation are part of the McBryde sugarcane plantation irrigation and field road systems. The sugar plantation agriculture companies dominated the Kaua'i economy from the early nineteenth century through the twentieth century. The last sugar plantation ceased to operate on Kaua'i in 2006.

Section 7 Significance Assessments and Effects Recommendations

Pursuant to HRS §6E, assessments of significance and integrity are included in this section for the historic property SIHP # 50-30-10-1051 and new historic properties present within the project area all of which are recommended to be included in SIHP # -1051.

7.1 Significance Assessments under HRS §6E

Under HRS §6E, for a historic property to be significant under HAR §13-284-6, the historic property should possess integrity of location, design, setting, materials, workmanship, feeling, and/or association, and meet one or more of the following criterion:

a Be associated with events that have made an important contribution to the broad patterns of our history;

b Be associated with the lives of persons important in our past;

c Embody the distinctive characteristics of a type, period, or method of construction, represent the work of a master, or possess high artistic value;

d Have yielded, or is likely to yield, information important for research on prehistory or history; or

e Have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts—these associations being important to the group's history and cultural identity.

7.1.1 SIHP # 50-30-10-0073

SIHP # 50-30-10-0073 was identified by Wendell Bennett (1931:117) with a description as follows:

> Site 73. Stone work, on the hill just inland from Site 72.
>
> On this hill is considerable mass stonework. The top of the hill has an irregular, rectangular structure of stone walls on the four sides, but not on the center of the top. These walls are 15 to 20 feet thick, or wide; built up 3 to 5 feet on the outside and flush with the ground on the inside. They are not everywhere continuous, but the impression given is that they were continuous at one time. Portions of the walls are so roughly laid that it appears to be cleared stone from the plantation, but other portions seem well made. [Bennett 1931:117]

Bennett suggests that some, or all, of the structure is the result of plantation field clearing but it seems likely Bennett was unclear on this at the time (1931). Bennett gave no assessment of significance. There was no further recordation of this designated site until the present study.

This historic property was identified in the approximate location identified by Bennett in 1931. A comparison of the present condition of the historic property with the description provided by

Bennett indicates that after 1931 the mound was enlarged by additional plantation rock clearing and piling upon the site. This supports Bennett's supposition that "it appears to be cleared stone from the plantation."

This historic property is assessed under HAR § 13-284-7 as significant under Criterion d (have yielded, or is likely to yield, information important for research on prehistory or history) only as it provides information regarding plantation field clearing practices of piling boulders and cobbles from sugarcane field clearing against natural outcrops and/or previous piles of field clearance boulders and cobbles so as to maximize productive field area. The historic property retains integrity of location but appears to have been significantly altered since it was first recorded (1931) and is thus suggested as lacking integrity of design, setting, materials, workmanship, feeling, and association. This assessment of significance is based on the historic property's understood association with plantation field clearing activities.

7.1.2 SIHP # 50-30-10-1051

SIHP # 50-30-10-1051 was identified by Hammatt and Shideler (2007) with a description as follows:

> One site, Site 50-30-10-[1051], McBryde Sugar Company Irrigation Infrastructure, was identified. The two features identified are two earthen ditches (No 18 Reservoir Ditch and the No 19 Reservoir Ditch).Our research indicates that these ditches were constructed by 1912 and most likely after 1904. [Hammatt and Shideler 2007:i]

SIHP # 50-30-10-1051 (SIHP # -1051) is assigned, in consultation with SHPD, to sugar plantation infrastructure features of the former McBryde Sugar Company, Ltd. fields in Lāwa'i and Kōloa *ahupua'a*.

Two features of SIHP # -1051, Feature A-the No. 18 Reservoir Ditch (Ditch 18) and Feature B-the No. 19 Reservoir Ditch (Ditch 19), previously documented in the archaeological inventory survey (AIS) of approximately 1.0 acre for a proposed Kaua'i Island Utility Cooperative (KIUC) electrical substation (Hammatt and Shideler 2007:i) are within the AES Solar and Storage (AES) project area. These two features (SIHP # -1051 Features A and B) were revisited and 31 new features of the McBryde irrigation infrastructure were identified.

Additional components of SIHP # -1051 Features A-Ditch 18 and B-Ditch 19 were documented during the AIS as well as five new feature groupings; Feature C-Roads, Feature D-Berms, Feature E-Aepo Reservoir system, and outside the project area, Feature F-Ditch section and G-Pipe. The feature groups and features are described below in alphanumerical order.

This historic property is assessed under HAR § 13-284-6 as significant under Criterion d (have yielded, or is likely to yield, information important for research on prehistory or history) only as it provides information regarding plantation field irrigation and road structure building techniques. The historic property retains integrity of location although sections of the ditches and roads appear to have been significantly altered since it was first recorded; nevertheless, it is suggested integrity of design, setting, materials, workmanship, feeling, and association are still partially extant. This assessment of significance is based on the historic property's understood association with plantation field irrigation and crop harvesting activities.

This study concurs with the Hammatt and Shideler (2007) assessment of significance as significant under Criterion d. Therefore, pursuant to HAR §13-284-6, SIHP # 50-30-10-1051 is assessed as significant under Criterion d (have yielded, or is likely to yield, information important for research on prehistory or history).

Five new groupings of features of SIHP # 50-30-10-1051 were identified during the pedestrian survey of project area. They are all features of plantation infrastructure associated with the extensive sugarcane production in the project area. It is recommended that the five properties be considered features of SIHP # -1051. The new properties are included in Table 4 by type, function, significance criterion, and mitigation recommendation and are assessed as significant pursuant to HAR §13-284-6, under Criterion d (have yielded, or is likely to yield, information important for research on prehistory or history). This assessment is based on the historic properties' potential to provide information regarding the sugarcane plantation agricultural system with its roots in the early post-Contact Hawaiian economy. These significance recommendations are included in this AISR for the review and concurrence of the SHPD.

Table 4. Archaeological cultural resource type, function, significance, and mitigation recommendations

SIHP #	Feature	Formal Type/ Description	Function	Significance Criterion	Mitigation Recommendation
50-30-10-0073	SIHP # -0073	McBryde Sugar field-rock clearance mounds	Field improvement	d	Not in project area
	73-1	Field-rock clearance mound			
50-30-10-1051	A	McBryde Sugar irrigation infrastructure	Water control	d	Archaeological monitoring
	A1	Culvert			
	A2	Culvert			
	A3	Sluice gate			
	A4	Sluice gate			
50-30-10-1051	B	McBryde Sugar irrigation infrastructure	Water control	d	Archaeological monitoring
	B1	Culvert			

SIHP #	Feature	Formal Type/ Description	Function	Significance Criterion	Mitigation Recommendation
	B2	Culvert			
	B3	Retaining wall			
	B4	Culvert			
	B5	Concrete			
	B6	Culvert			
	B7	Sluice gate			
	B8	Culvert			
	B9	Concrete pipe			
	B10	Culvert			
	B11	Retaining wall			
50-30-10-1051	C	Plantation roads, Unimproved	Transportation	d	Archaeological monitoring
	C1	Road			
	C2	Road			
	C3	Road			
	C4	Road			
	C5	Road			
	C6	Road			
		Road			
50-30-10-1051	D	Earthen berms	Agriculture	d	Archaeological monitoring
	D1	Berm			
	D2	Berm			
50-30-10-1051	E	McBryde Sugar irrigation infrastructure	Water storage and control	d	Not in project area
	E1	Reservoir			
	E2	Reservoir			
	E3	Reservoir			

SIHP #	Feature	Formal Type/ Description	Function	Significance Criterion	Mitigation Recommendation
	E4	Reservoir			
	E5	Concrete Spillway		d	Archaeological monitoring
	E6	Concrete platform		d	Archaeological monitoring
	F	Ditch segment	Water control		Not in project area
	G	Pipe	Water control	d	Not in project area

7.2 Effects to Significant Historic Properties Recommendations

Pursuant to Hawai'i State historic preservation review legislation in HAR §13-284-7, and based on the recommended significance assessments of the previously identified SIHP # -1051 and new historic properties in the project area (all elements of abandoned cane plantation road and irrigation systems), the project-specific effect determination is "Effect, with agreed upon mitigation commitments." These effect recommendations for the AES DE Lawai Solar and Storage project, Lāwa'i and Kōloa Ahupua'a, Kōloa District, Kaua'i TMK: [4] 2-6-003:001 por., are included in this AIS report for the review and concurrence of the SHPD.

Section 8 Mitigation Recommendations

Archaeological monitoring following completion of a SHPD-accepted archaeological monitoring plan (AMP) is recommended for mitigation for AES DE Lawai Solar and Storage Project, Lāwa'i and Kōloa Ahupua'a, Kōloa District, Kaua'i, TMK: [4] 2-6-003:001 por., in accordance with HAR §13-279, and with specific provisions for archaeological documentation during construction in accordance with HAR §13-278 for SIHP # 50-30-10-1051 Features A through D comprising irrigation ditches, roads and culverts, and earthen berms. The AMP will be submitted to SHPD for review and acceptance prior to commencement of project activities that could adversely affect the historic properties.

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